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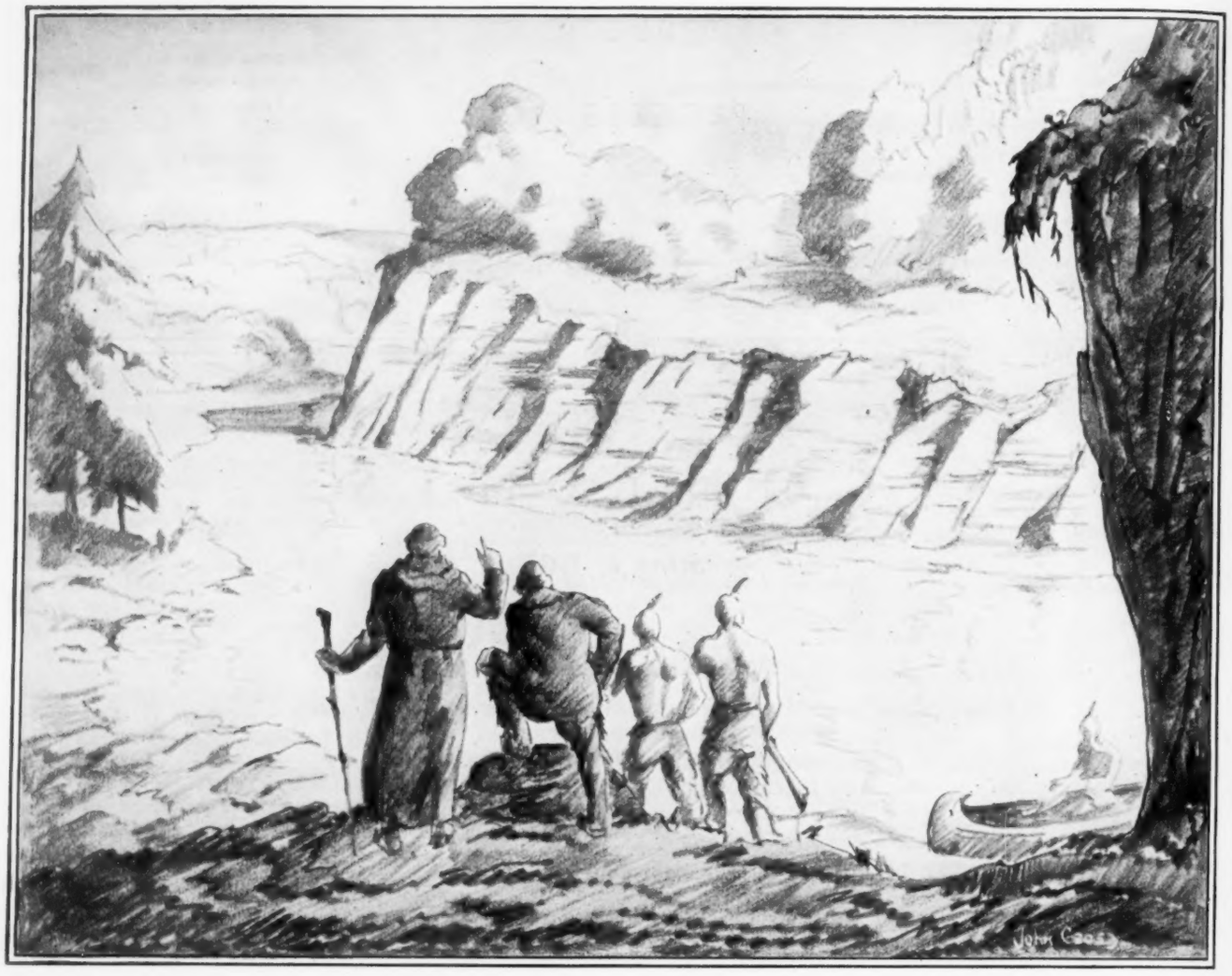
COAL DEPOSITS ARE MANY



FATHER HENNEPIN, French Jesuit missionary explorer, is credited with the first discovery of coal in what is now the United States. ,,, In 1679 he found indications of coal on the banks of the Illinois River and noted in his diary that there was a "cole mine" above Fort Crevecoeur, near the present city of Ottawa, Illinois. ,,, We find recorded the discovery of coal in Virginia in 1701 and in Ohio in 1755. George Washington told in his journal of inspecting a coal mine on the banks of the Ohio in 1770. Coal has been found in 31 of the present 48 states. ,,, Original coal resources of the United States are placed by the United States Geological Survey at 3,214,898,600,000 tons, of which 26,865,823,000 had been mined to the end of 1931. ,,, Early attempts to smelt iron with coal failed, but the need for fuel other than charcoal grew pressing and in 1836 anthracite coal was successfully used in smelting, remaining in use until coke replaced it.

Interlake Iron Corporation has extensive resources of high grade coals for metallurgical and other uses through ownership in the Kingston-Pocahontas Coal Co., whose West Virginia mines have reserves of 108,000,000 tons; in the Black Mountain property with 30,000 acres of coal land in Kentucky and Virginia; and in the Mather Collieries, with a large mine in Greene County, Pa.

INTERLAKE IRON CORPORATION

PIG IRON ,, COKE

PICKANDS, MATHER & COMPANY, Sales Agents

CLEVELAND ,, CHICAGO ,, DETROIT ,, ERIE

Volume 90 Number 23

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

The Week In Steel

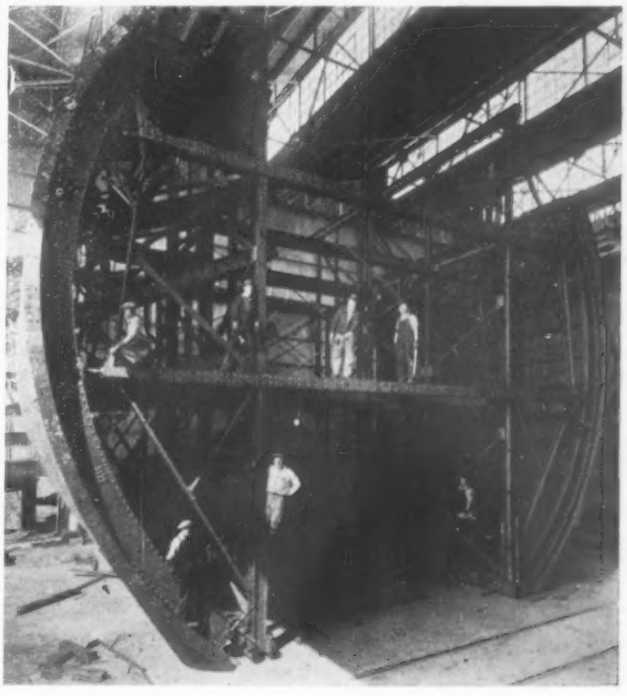
STEEL is a young industry—so young that it is spanned by the lifetime of men now leaving it. Although he was 36 when he adapted the basic open-hearth process developed in the United States by Samuel T. Wellman and built at the Homestead works of Carnegie, Phipps & Co. the first commercial basic furnace, Julian Kennedy, now dead (p. 19), lived to see as many as 47,000,000 tons of steel made by this process in one year, a total of 700,000,000 tons in 44 years. . . . And with the retirement this week of Theodore W. Robinson, a vice president, the Illinois Steel Co. loses an executive who recalls when Gary was a sand dune and South Chicago a pasture (p. 17). It is to Mr. Robinson's imagery that the American Iron and Steel institute owes its motto, "Right Makes Might," and its seal depicting "the sword and spear transfused by the alchemy of wisdom into the plowshare and the pruning hook . . . the steel of peace and of war springing from the crucible . . . the phoenix rising from the ashes of discord . . . the wreath of olive leaves a laurel to the strength of unity and the gospel of co-operation."

Institute's Slogan Is Rediscovered

This "gospel of co-operation," first preached at the Chicago meeting of the Institute in 1910 and since emblazoned on every document, may be prophetic of the promise of President Schwab at the May 19 meeting in New York that the scope of the Institute is now being broadened. . . . It also represents the sentiments of Charles F. Abbott, executive director, American Institute of Steel Construction, in urging the co-operation of buyers and sellers in placing commodity prices on an equitable basis (p. 13). Addressing the convention of the National Association of Purchasing Agents at Detroit, he expressed skepticism whether capitalism can survive the present era of price cutting and bid chiseling. Price stabilization—not to be confused with price fixing—by co-operative action in the common interest, with the sale of merchandise below cost made illegal except for forced liquidation, is the Abbott prescription.

Put Freewheeling in Price Structure

Detroit, nerve center of the automobile industry, supplied a unique setting for such a stricture, for, goaded by the conviction that for a long time price will be the star salesman of automobiles, the industry is intensifying its pressure upon prices of materials (p. 21). Supply interests contend they can grant no further concessions except at the expense of labor, and that as labor's purchasing power diminishes



Side forms for concreting 50-foot diversion tunnels at Hoover dam set up in shop of Consolidated Steel Corp., Los Angeles, before being shipped. Chutes through which concrete will be poured into walls are shown in place at left

Hortonspheroids, 40 x 136 feet, used for oil storage by East Texas Refining Co., Longview, Tex., fabricated by Chicago Bridge & Iron Works, Chicago. Joints were lapwelded by shielded arc process of the Lincoln Electric Co., Cleveland

the market for automobiles contracts. Automobile manufacturers insist that more efficient management and methods of production be devised. And the disposition of more manufacturers to edge into the low-price field, with its narrow margins, dampens hopes of higher material prices.

Inured to Falling Prices but Not Output

Neither low prices nor reduced salaries and wages are strangers to the steel industry. At this time falls the third anniversary of the beginning of the decline in production (p. 13)—pig iron having registered its alltime peak in May, 1929, and steel ingots in June—but the depression in prices has been in process since late 1920. . . . Wage rates in all industries, according to the National Industrial Conference board (p. 14), have been lowered 13.9 per cent, a condition which is tempered to 11.1 per cent when weighted. In executive salaries the weighted reduction is 14.9 per cent, in other salaries 13.1 per cent.

Ford Develops Welding and Forging

This remedy for attaining lower prices—more efficient production—is one that the automobile industry itself takes in large doses. For example, the first of a series of technical articles on processes employed by Ford in manufacturing the new eight and four discloses (p. 27) that electric welding is more widely utilized and is more automatic in application, that forging practice tends toward pressure and extrusion methods. Hot spinning, considered a decided advance when Model A was put in production late in 1927, is now passe. A revamped disassembly line is supplying 200 junk cars daily to the new 400-ton open-hearth furnace for remelting.

Auto Needs Support 21 Per Cent Steel Rate

Ford releases of parts and steel products not rolled at the Rouge steelworks are more widely reported (p. 43) as a result of noteworthy expansion in the Ford schedule for June, lending support to steelmaking in the Middle West. . . . Demand for toluol for automobile finishes (p. 56) has been quickened moderately. . . . Recovery of phenol from by-product coke liquors at a large saving in power and extraction costs is being effected in Germany (p. 36) by the use of tricresylphosphate. . . . Another economy in by-products of steel manufacture is utilization of waste heat gases (p. 30) for drying and preheating work of an automatic pot furnace for case hardening and heat treating by liquid bath processes.

Iron Good, but Not Enough of It

When slow-blowing of blast furnaces was inaugurated as a concomitant of the depression skeptics feared that the quality of basic open-hearth heats would be affected were sluggish iron to be included in the charge (p. 31). Various open-hearth superintendents, however, detect no difference. . . . Statistics on May output of pig iron (p. 16) reveal more sluggishness in demand than in the iron. A daily rate of 25,282 gross tons is the lowest certainly since 1903, possibly since 1897. On May 31 only 54 out of 297 potential stacks were in blast. . . . Steel output also is plumbing a new low, the rate of 21 per cent for the week ended June 4 (p. 51) undercutting even New Year week.

Acid or Milk, Steel Transports It

Shipping and handling of acids are made safer by the design of a lead-coated steel drum (p. 29), the outer shell of which is heavy sheet steel welded at the seams and the inside a continuous coating of lead. . . . Signal success has attended the operation of a fleet of 20 milk trucks, of 1600 gallon capacity (p. 32), lined with No. 10 gage chrome-nickel 18-8 steel. . . . A little less liquid to handle are steel plates 1 inch thick, 8 feet wide, 30 feet long and weighing 5 tons, which a Pacific coast mill accomplishes (p. 31) by means of ball transfers. . . . Three-dimensional commodities designed for machine production will be displayed at an exposition (p. 30) opening in New York June 20 and continuing for three months.

Co-Operate, Stabilize Prices Or Face Ruin, Abbott Warns

PRICE stabilization, not price fixing, should be the especial concern of all organized trades and industries, declared Charles F. Abbott, executive director, American Institute of Steel Construction, New York, in addressing the 17th annual international convention of the National Association of Purchasing Agents at Detroit, June 6.

Reckless, selfish competition has brought American industry to the brink of ruin and unless checked "it is seriously questioned if our capitalistic system can survive," said Mr. Abbott. Price cutting and bid chiseling are paid for by the laboring man, have a tendency to check the recovery of business, are the result of greed and ambition on the part of management, he charged. Mr. Abbott said in part:

Business exists for making profits. When profits disappear, business likewise disappears. The satisfaction of labor working for an adequate wage, of the consuming public for an adequate supply of goods at reasonable prices, of the investor for a return on his money, of the government for an unimpaired source of tax returns, are all dependent uniformly upon the profitable operation of business.

Prices and Profits Overboard

Unequalized production and consumption has kept prices at a level that has created losses for most all our business interests. In the face of this situation there are too many who are still obsessed with an inherent faith in getting all the business in sight as the only solution to their own problems. They believe that it offers the one assurance of continued operation.

In such a wild scramble for business, prices and profits have been cast overboard as a few, prompted by selfishness, have created a demoralized condition throughout their industry, and in opposition to stabilization. * * *

The profit record in most of our basic industries such as oil, coal, lumber, metal, textile, rubber, food and others has been anything but encouraging. We have been dissipating important natural resources at cost, and at a loss.

During 1931 the steel industry, that consumes the most valuable of all natural resources, sold approximately 20,000,000 tons of finished steel products and paid $1 per ton for the privilege of doing so. * * *

Destructive competition has brought consumers to the point where they regard low prices as the only consideration in their purchases. Price cutting has educated buyers to realize that the low price of today may not be the low price of tomorrow.

The problem is not so much the cut price as it is attitude of some of the sellers who are out to get the business at any price. Invariably they cut there own low price, and such a policy incurs economic loss. The regrettable part is that someone loses his temper and uses his time and money to prevent someone else from getting business to which he may be entitled.

Salesmanship based upon a greedy determination to secure all the business in sight is a principal cause of the present-day demoralization. The fundamental principles of salesmanship, of proper pricing, of costs and profits, are cast overboard as hysteria is substituted for sound judgment.

Industry must understand and accept the theory of stabilized production. It must recognize the folly of attempting to operate a plant on a basis of 50 per cent capacity output when statistics indicate but 25 per cent capacity demand. It must overcome that degree of selfishness which induces others to enter into a war of price cutting in an attempt to keep operating if the business is to endure. It must adopt the formula of total cost plus profit in fixing selling prices.

The principal criticism against any attempt to improve the price situation is that the public suffers when prices are advanced and they benefit when prices decline. There could be no argument if unreasonable profits were being obtained, but if prices are below the cost of production then the public suffer even to a greater extent.

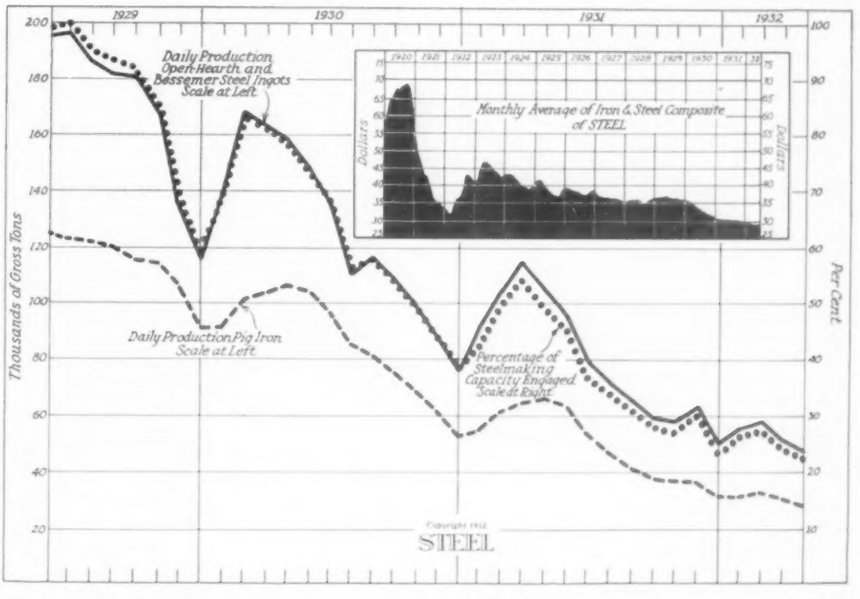
Public welfare is advanced when business is profitable, it suffers when prices are reduced below cost. If we really desire to protect public interest then we should make illegal the sale of merchandise below cost except in instances where liquidation of inventories or the disposal of perishable goods might be necessary to prevent losses. * * *

Buyers are quite generally criticized for most of the unfair practices. We must not forget that most of the unfair tactics now being practiced by the buyer were taught to him by the over-anxious seller who is now being afflicted with tricks of his own creation. In times like the present when a revival of purchasing power if of such importance for business recovery, the interests of both buyers and sellers are more closely dependent upon one another.

Buyers and Sellers Linked

Every business institution is both a buyer and a seller. If we are to sell at a profit we must buy at a profit. Take for instance the automobile industry. If their purchasing departments were to pound down the price for steel or other requirements they would lose in the end. They cannot expect to take the profits away from their supply sources and get the profits that otherwise would be available.

It is time for the price cutter to stop price cutting and for the bid chiseler to discontinue his unfair practice. It is time we should all recognize that we are both buyers as well as sellers. Both functions should be intelligently conducted, but we cannot expect fair prices and



AN ANNIVERSARY THAT IS NOT CELEBRATED: Three years ago at this time, almost six months before security values attained their peak, the production of iron and steel began to slide. The daily rate of pig iron production reached its alltime high in May, 1929, while the open-hearth and bessemer record was set in June, 1929. But prices, as recorded by the iron and steel composite of STEEL, *have been on the downgrade for a number of years, as the inset chart reveals*

fair treatment if we hammer down prices below a reasonable point in our own purchases. We must be as fair in our buying as we expect other buyers to be toward us.* * *

If our business men would agree to discontinue price cutting and bid chiseling and to pay fair prices we would hasten the trend of business revival. We should all insist that our purchasing agents recognize the right of all from whom we buy to a fair profit and to discourage purchases at prices that are below a reasonable minimum.

Now is the time to bolster up commodity prices. We have had two years of fighting, two years of price demoralization. Costs have been disregarded, salaries and wages have been cut many times and price cutting has driven prices lower and lower. Unemployment and bankruptcies will prove to be the ultimate end. * * *

The public is demanding relief from intolerable conditions. The unemployed insist upon an opportunity to work. Farmers must find an outlet for their crops. Our business men are eager to do their part but they cannot exist upon losses. Who would deny a fair profit on the business or labor of the farmer, the tailor, the baker or the candle-stick maker? If brutal warfare has driven prices to the point where losses have replaced the profits, then why should the right to combine for the purpose of advancing prices until they are fair and profitable be denied to them? * * *

Co-Operation Is Answer

The potential powers of co-operative organizations are very great and if the full possibilities could have been exerted without the fear of prosecution, there are few who would question the benefits that could have been made possible not only to the industry they serve, but to employment and the public as well.

All over the world we have witnessed rewards of co-operation. If our industries are to cope successfully with their problems all that is necessary is effective leadership and a proper spirit of co-operation to develop within an industry and to be supported and given practical application. * * *

By co-operative effort we have effected economies through standardization, simplification and the elimination of waste. Obsolete plants and improper selling methods are not entirely extinct, and many executives are still ignorant of their costs. It is deplorable that such should be the case in this day when changing conditions and accelerated methods are forcing a complete transition. If our free institutions in business are to continue we are faced with the tremendous problem of educating our business executives en masse to a greater consciousness of their duty.

There are many who feel that membership in trade associations should be made compulsory or members indentified by a system of licensing. There is logic to their contentions as the co-operator is the constructor who is actively and financially participating in a program to build up his industry and insure better business. The non-co-operator is a destructor who is tearing down and preventing the constructive work being undertaken by his competitors.

Bankers are beginning to recognize this distinction. The member is entitled to more favorable consideration. Buyers are likewise attaching greater importance to trade association membership. They have reasons to place greater confidence in those who are promoting industrial standards and abiding by the practices as established by this association.

LARGEST CENTRAL MASSACHUSETTS PROJECT: For this municipal stadium for Worcester, Mass., the Eastern Bridge & Structural Co., Worcester, fabricated 2500 tons of structural steel. The stadium is now enclosed

Salary Reductions Average 16 Per Cent; Wages, 14

Executive salaries have been reduced, on the average, by 20.3 per cent; other salaries by 15.9 per cent; and wage rates by 13.9 per cent, according to survey by the National Industrial Conference board, New York. To measure the effect of these reductions on national purchasing power the board related them to the number of persons affected by each cut, and then computed a weighted average. The weighted average reduction in executive salaries has been 14.9 per cent; in other salaries, 13.1 per cent; and in wage rates, 11.1 per cent.

Having obtained returns from 1718 business concerns, the board states the results "are a dependable index of compensation changes in practically every gainful occupation except agriculture and personal or professional service." Smaller concerns have made more drastic reductions than have the larger. The movement to reduce salaries and wages did not become general until the depression had gone into its second year, as only 11 to 12 per cent of the reductions reported were made in 1930.

In 1929 the 1718 concerns employed 3,258,666 persons; in 1932 the number was 2,391,009, or 26.6 per cent less.

Porcelain Enamel Group Elects New Officers

Election of officers for the coming year by the Porcelain Enamel institute, held at the second annual meeting of the institute in Cleveland recently, resulted as follows: President, Rudolf W. Staud, sales promotion manager, Benjamin Electric Mfg. Co., Chicago; vice presidents, Bennett Chapple, vice president, American Rolling Mill Co., Middletown, O., and W. Russell Greer, vice president, Porcelain Enamel & Mfg. Co., Baltimore; re-elected treasurer, William Hogenson, president, Chicago Vitreous Enamel Product Co., Chicago; and secretary, George P. MacKnight, publicity director of the institute.

R. A. Weaver, president, Ferro Enamel Supply Corp., Cleveland, is the retiring president.

Call Parley on Sheet and Tin Plate Wage Scale

Pittsburgh—Conference on sheet and tin plate wage scale for the scale year beginning July 1 has been arranged between Western Sheet and Tin Plate Manufacturers and representatives of the Amalgamated Association of Iron, Steel and Tin Workers.

This conference will be held in Pittsburgh beginning June 7. The

Amalgamated delegation of conferees will include 19 members headed by President M. F. Tighe. The independent manufacturers' representatives are being selected but will include Secretary Elias Jenkins, of Youngstown, O.

While no date yet has been set for a like wage conference between the Western Bar Iron association and the Amalgamated, this involving the puddling wage base, it seems likely that following custom such a meeting will take place immediately following the adjournment of the sheet and tin plate wage conference at Pittsburgh. The secretary of the Western Bar Iron association is Simpson C. Leonard, Detroit.

Six Months from Steel to Tenants, Is Chicago Record

Several Chicago records for speed in building construction have been established by the new Field building, now nearly completed. First tenants started moving in recently, less than six months from the day the first steel was set in place.

Steel for the 24-story structure was erected in 40 working days, against the previous average of 75 days for a project of similar size, and the stone was laid at the rate of one floor a day, the fastest rate ever attained in Chicago.

Wrecking of the building on the site now occupied by the Field building was started Sept. 26, 1931, and the first steel put in place Dec. 12, 1931.

Further Dumping of Foreign Steel Charged by Institute

WASHINGTON — American Iron and Steel institute filed with the treasury department, June 3, a complaint that foreign steel products, including angles, bars, reinforcing bars, beams, billets, blooms, channels, joists, plates, rods, sheets, structural shapes, wire nails and netting are being dumped in the United States from Belgium, France, Germany and Luxemburg.

Such imports, the Institute contends, are being received on the basis of prices materially lower than in countries of exportation. The complaint suggests that these extraordinarily lower prices on foreign products here indicate possibility that the net yield must be less than the cost of production.

While tariff protection is not sufficient for domestic producers to obtain a return on their invested capital, the particular tragedy is that American workmen are being rendered idle, the Institute declares through Attorney Doherty.

Early in May, the Institute charged iron and steel hoops were being dumped from England, France, Belgium and Holland. The treasury also has before it a protest against alleged dumping of pig iron from England and Holland.

□ □ □

Washington believes that the revenue bill, reported back from conference June 3, represents its major contribution to a recovery in business.

As emanating from the conference of both houses, the bill exempts commercial consumers of electrical energy from the proposed tax of 3 per cent. For two years a tax of 13¾ per cent is to be levied on corporate income and 14 per cent on corporations filing consolidated and affiliated returns. A 2-cent stamp tax on all bank checks and drafts proposed in the senate was accepted by the house conferees. Tariffs on oil, coal, copper and lumber were retained.

It was expected that the revised bill would be ready to go to the President early this week.

□ □ □

Decision of the United States customs court that the President exceeded his authority in levying an increase in duty on certain woven wire fencing and netting is being appealed by the assistant attorney general at New York, with approval of Commissioner of Customs Eble.

□ □ □

The Hawley bill, to adjust tariff duties as foreign currencies fluctuate, has been killed by the house ways and means committee.

□ □ □

The House has passed the Steagall bill to provide a guaranty for deposits in banks. It goes to the Senate.

□ □ □

It is now being freely predicted that Congress will not be able to adjourn before July 1.

□ □ □

United States Supreme Court has held that the President does not have to sign bills before congress adjourns but can sign them any time within ten days after adjournment.

A TUNNEL WITH 133 MILES OF WELDING: When the East Boston 31-foot vehicular tube is completed the steel liner shown above will be covered with 18 inches of concrete. This liner is made up of rings 31 feet in diameter, 2½ feet wide. Each ring contains 11 panels, each weighing 1250 pounds. Altogether, the steel totals 12,500 tons. Panels were fabricated by the Commercial Shearing & Stamping Co., Youngstown, O. After stamping to shape, end plates and rail stiffeners were welded by the shielded arc process of the Lincoln Electric Co., Cleveland. There are 132.72 miles of welding on the 19,467 panels

Report Progress on Merger

Cleveland—Negotiations for acquisition of the Newton Steel Co., with mills at Monroe, Mich., and Newton Falls, O., by the Corrigan, McKinney Steel Co., Cleveland, as noted in STEEL for May 16, are progressing. Directors of both companies are discussing such a merger. It is not likely that Corrigan-McKinney will assume obligations of the Newton company.

Pig Iron Production in May Establishes New Low Point

MAKING another drastic curtailment, production of coke pig iron in the United States in May dropped to the lowest point since figures have been compiled on a monthly basis. It is believed that operations were the lowest since the midsummer of 1897, although no reliable statistics for that period are available.

Not only did output decrease sharply, but operating blast furnaces dropped from 59 on April 30 to 54 on May 31, a situation which offers no comfort for an improved showing in June.

Total production in May was 783,769 gross tons, which, compared with the 855,734 gross tons in April, was a loss of 71,965 tons, or 8.3 per cent; and this in spite of the fact that May was a 31-day month against the 30-day month of April. Incidentally, the April total had established a new low point, being well under the 864,642-ton bottom of July, 1921. Production for May, 1931, was 1,995,001 tons.

MONTHLY PRODUCTION

	1932	1931	1930
Jan.	971,437	1,715,443	2,838,751
Feb.	960,550	1,711,192	2,845,937
Mar.	967,015	2,028,906	3,252,822
April	855,734	2,009,582	3,191,119
May	783,769	1,995,001	3,241,477
Tot. 5 mos.	4,538,505	9,460,124	15,370,106
June		1,637,998	2,934,508
July		1,462,270	2,638,441
Aug.		1,279,205	2,525,105
Sept.		1,168,436	2,276,781
Oct.		1,172,781	2,165,374
Nov.		1,101,820	1,865,458
Dec.		980,377	1,665,715
Total		18,263,011	31,441,488

Average daily production in May was 25,282 tons, a decrease of 3242 tons, or 11.4 per cent, from the 28,524-ton rate of April. The previous low point was 27,892 tons in July, 1921. Production in May, 1931, was 64,355 tons per day and this was the beginning of the present decline which has been continuous save for a slight rise in February of this year.

For the five months ending May, total iron output was 4,538,505 gross tons, this comparing with 9,460,124 tons for the corresponding period of 1931 and 15,370,106 tons for the first five months for 1930. In the record year of 1929, output for this period aggregated 17,922,433 tons.

Relating production to capacity, the operating rate for May was 17.5 per cent, against 19.8 per cent in April. This compares with 44.7 per cent in May, 1931; 74.2 per cent in May, 1930; and 89.8 per cent in May, 1929.

During the month, 4 furnaces were blown in and 9 were blown out or banked. Of the merchant class, 2 were blown in and 3 were blown out, with a decrease of 1 stack. Of the nonmerchant or steelworks class, 2 resumed operations and 6 were removed from blast, the net loss being 4 units.

Furnaces resuming operations in May were: In Pennsylvania: Neville Island, Davison Coke & Iron Co.; two Carrie, Carnegie Steel Co. In Alabama: Woodward No. 2, Woodward Iron Co.

Stacks blown out or banked were: In Ohio: Ohio Nos. 2 and 4, Carnegie Steel Co. In Pennsylvania: One Monessen, Pittsburgh Steel Co. In New York: Buffalo No. 2, Hanna Furnace Corp. In Kentucky: Ashland, American Rolling Mill Co. In Alabama: Woodward No. 1, Woodward Iron Co.; Ensley Nos. 3, 4 and 6, Tennessee Coal, Iron & Railroad Co.

RATE OF OPERATION
(Relation of Production to Capacity)

	1932[1]	1931[1]	1930[2]	1929[3]
January	21.8	38.4	65.0	79.0
February	23.0	42.5	72.1	82.2
March	21.7	45.4	74.5	85.5
April	19.8	46.5	75.4	87.4
May	17.5	44.7	74.2	89.8
June	.....	37.9	69.3	88.5
July	.....	32.7	60.3	87.2
August	.....	28.7	57.8	86.4
September	.....	27.0	53.8	83.3
October	.....	26.3	49.6	82.6
November	.....	25.5	44.1	75.8
December	.....	22.0	38.1	65.5

[1]Based on capacity of 52,515,875 tons Dec. 31, 1930; [2]on capacity of 51,490,680 tons; [3]on capacity of 51,069,895 tons. Capacities by American Iron and Steel Institute.

MAY IRON PRODUCTION

	No. in blast last day of month May	April	Total tonnage made Merchant	Nonmerchant
Ohio	14	16	10,934	191,417
Pennsylvania	14	12	15,981	158,810
Alabama	4	7	29,793	47,125
Illinois	6	6	39,185	46,168
New York	4	5	23,829	39,569
Colorado	1	1		
Indiana	5	5		
Maryland	2	2	646	114,394
Virginia	0	0		
Wisconsin	0	0		
Kentucky	0	1		
Massachusetts	0	0		
Tennessee	0	0	8,756	27,330
Utah	1	1		
West Va.	1	1		
Michigan	2	2		
Minnesota	0	0	.....	24,613
Missouri	0	0		
New Jersey	0	0		
Spiegel and ferro — all states			.....	5,219
Total	54	59	129,124	654,645

Lake Superior Iron Ore Prices Officially Reaffirmed

Iron Ore Prices, Page 52

Cleveland—Leading Lake Superior iron ore producers here have announced officially reaffirmation of prices for the season 1932. These prices, now in effect for the fourth consecutive season, are: Old range bessemer, $4.80; Mesabi bessemer, and old range nonbessemer, $4.65; Mesabi nonbessemer, $4.50; and high phosphorus, $4.40, per gross ton, lower lake ports.

Contracts for 1932 on which producers will supply associated interests, and others, have been written on the basis of the foregoing figures. Producers and consumers generally have felt that to establish the market at these levels would exert a stabilizing effect on iron and steel. There has been no pressure for lower prices. Ford Motor Co.'s inquiry, which in recent years led to establishment of prices, has not yet appeared; no formal inquiry may be issued this year, and the tonnage purchased, if any, will certainly be smaller than usual. Not much tonnage will be developed in the open market.

AVERAGE DAILY PRODUCTION

	1932	1931	1930	1929
Jan.	31,336	55,337	91,573	110,742
Feb.	33,122	61,114	101,640	114,942
Mar.	31,194	65,448	104,930	119,622
Apr.	28,524	66,986	106,371	122,106
May	25,282	64,355	104,564	125,753
June	.....	54,599	97,817	123,837
July	.....	47,170	85,110	122,016
Aug.	.....	41,264	81,455	120,845
Sept.	.....	38,947	75,893	116,548
Oct.	.....	37,831	69,851	115,747
Nov.	.....	36,727	62,182	106,081
Dec.	.....	31,625	53,732	91,513
Av.	29,990	50,035	86,141	115,808

This is the latest date on which iron ore prices have been announced since 1921, when it was June 16. Last year they were announced April 15.

Shipments continue at an extremely low rate, the amount moved by vessel from upper lake ports in May reported by the Lake Superior Iron Ore association, Cleveland, as 110,826 tons, compared with 1,658,469 tons last May. For the season to June 1 the amount is 154,899 tons; last year to June 1 it was 1,790,317 tons.

A. M. Byers Co., Pittsburgh, has declared a regular quarterly dividend of $1.75 on the preferred stock, payable Aug. 1 to record July 15.

Industrial Men in the Day's News

Charles L. Wood, Vice President, United States Steel Corp.

THIRTY-SIX consecutive years with Steel corporation subsidiaries culminate in a commission to direct all sales policies of the Corporation.

ALTHOUGH trained in mining engineering, he pursued this vocation only a short time, being by nature a steel man.

THIS is his third important promotion in less than seven years His headquarters now will be in New York.

CHARLES L. WOOD, formerly vice president and general manager of sales of the Carnegie Steel Co., Pittsburgh, June 1 became vice president in charge of sales for the United States Steel Corp., with headquarters in New York.

Prior to a 36-year affiliation with the steel industry, which has extended consecutively since 1896, he was trained in mining engineering at Ohio State university, and engaged his energies in that direction in Colorado and other western districts after leaving school.

Mr. Wood was born in Youngstown, O., Sept. 11, 1873, and attended the public schools of that city. After attending college with the class of 1896, his entrance into the industrial field was with the Calumet Furnace Co., Chicago, as a chemist. Business troubles forced this company to suspend operations and at this point Mr. Wood turned toward mining engineering.

In 1896, he became affiliated with the American Steel Hoop Co. and was made manager of the order department when the company moved to New York. Upon its consolidation with the Carnegie Steel Co. and with the formation of the United States Steel Corp., Mr. Wood was transferred to a position in the sales department of the Carnegie Steel Co.

A thorough knowledge of the bar and hoop business gained for him the appointment as aide to W. G. Clyde when the latter became assistant manager of sales in that department, and Mr. Wood has consistently moved forward progressively to higher positions.

When Mr. Clyde was named vice president and general manager of sales in 1918 Mr. Wood was appointed to the assistant sales managership in charge of bar, hoop and band production. He was named general sales manager of the Carnegie Steel Co. in November, 1925, and a vice president in June, 1930.

Mr. Wood is married, and through his new affiliation with the Corporation probably will take up permanent residence in New York. He finds recreation in golf and billiards and is a member of the Chartiers Heights Country club, Crafton, Pa., and the Oakmont Country club, Oakmont, Pa. In addition, Mr. Wood belongs to the Duquesne, Keystone Athletic and Fellows clubs, all of Pittsburgh; the Cloud club, New York, and the Recess club, Detroit. He is a member of the American Iron and Steel institute.

THEODORE W. ROBINSON, vice president, Illinois Steel Co., Chicago, who retires from that office June 7, his seventieth birthday, under the rules of the United States Steel Corp, has been prominently identified with the tremendous development that has occurred in the iron and steel industry during the past 45 years.

Mr. Robinson's connection with the steel industry dates from 1885, when he joined the Joliet Steel Co. as a chemist following his graduation from the Massachusetts Institute of Technology in 1884, although including his father and grandfather the Robinson family for many years previous was engaged in the manufacture of cut nails in southeastern Massachusetts. Mr. Robinson was born in Boston.

When the Joliet Steel Co. was consolidated with the North Chicago Rolling Mill Co. and the Union Iron & Steel Co. in 1889 to form the Illinois Steel Co., Mr. Robinson was transferred to the Milwaukee works of the new company in charge of its blast furnace operations. Three years later he joined the Colorado Fuel & Iron Co., taking charge of its Pueblo, Colo., works, and for seven years he supervised the iron and steel manufacturing activities of the company.

Returning to the Illinois Steel Co. in 1899 as general superintendent of the Joliet plant, Mr. Robinson shortly was made general manager and later vice president. Although retiring from active association with the company, he has been asked by the United States Steel Corp. to remain with it in an advisory capacity, and to care for his various interests he will maintain an office at 208 South LaSalle street, Chicago.

Besides his affiliations with the

iron and steel industry, Mr. Robinson is a director in numerous companies, including the Central Republic Bank & Trust Co. of Illinois, Illinois Bell Telephone Co., South Chicago Savings bank and Personal Loan & Savings bank. He has made numerous contributions to technical and other societies in this country and abroad, principally on technical and economic subjects, and is the designer of the official seal of the American Iron and Steel institute, with which he has been associated since its formation.

Mr. Robinson has been intensely interested in civic activities, especially educational problems, at one time having been a member of the Chicago school board, and state chairman of the National Society for the Promotion of Industrial Education. He is a trustee of Northwestern university, a term member of the Corporation of the Massachusetts Institute of Technology, and is actively identified with various other educational, scientific and civic projects. He was chairman of the so-called River Straightening committee of Chicago and is a member of the advisory commission to the mayor of Chicago. In 1925 Mr. Robinson was a member of the Dawes commission which went to Santa Domingo to reorganize the finances of that republic.

Always an ardent sportsman and formerly a hunter of big game, Mr. Robinson has found in the rod and gun his principal recreational diversion.

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Francis O. Wyse, publicity manager, Bucyrus-Erie Co., South Milwaukee, Wis., has been re-elected president of the Milwaukee Association of Industrial Advertisers.

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H. M. Davison has resigned as excavator sales manager of the Harnischfeger Sales Corp., Milwaukee, and is now in the East completing plans in connection with a new organization.

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W. C. Packard has been made sales manager of the Standard Sand & Machine Co., Machinery Hall building, Chicago, manufacture of sand mixers, screens and other sand conditioning and handling equipment.

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James A. Farrell, retired president of the United States Steel Corp., delivered the address at the annual commencement of the Stevens Institute of Technology, Hoboken, N. J., June 4—his first public appearance since returning from Honolulu, June 1.

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John H. Hearding, assistant general manager of the Oliver Iron Mining Co., Duluth, subsidiary of the United States Steel Corp., retired April 3. For over 40 years he was associated with iron mining in Minnesota.

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A. Clark Moore has been made president of the Chicago Railway Equipment Co., Chicago, succeeding the late Edward B. Leigh. Mr. Moore has been identified with the company since 1921, serving as vice president until his promotion to executive vice president in 1931.

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Oscar A. Wilkerson, vice president, Globe-Wernicke Co., Cincinnati, has been elected president succeeding Henry C. Yeiser Jr., who is now chairman of the board.

J. S. Sprott, Youngstown, O., has been appointed vice president and general manager.

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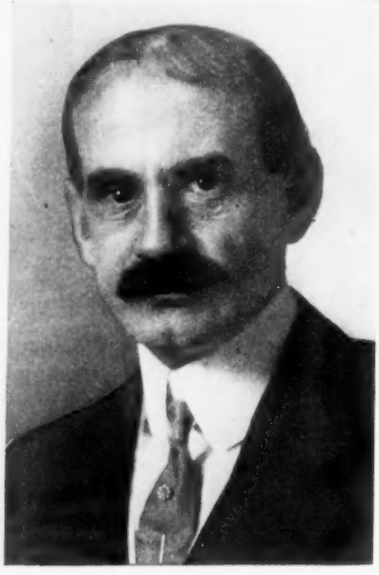
Harry G. Porch, New England manager for Lukens Steel Co., 131 State street, Boston, will also be in charge of the new Boston headquarters of Lukenweld Inc., subsidiary



Theodore W. Robinson

of the Lukens Steel Co., with offices in the same building. Mr. Porch's assistant in the activities of Lukenweld Inc. in New England will be H. G. Austin.

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J. C. Miller has been appointed manager of sales of bolts, nuts and rivets for Bethlehem Steel Co., with headquarters at Bethlehem, Pa. He succeeds H. A. Wagner, retired. Mr. Miller was graduated from Lehigh university in 1915, and for the past 12 years has been production engineer at the Lebanon plant of Bethlehem company.

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Boyd Fisher, who became general manager of the National Machine Tool Builders association, Cincinnati, Dec. 15, 1931, following the resignation of E. F. DuBrul, has resigned. Previously he had been connected with the Executive club and Aluminum Castings Co., Detroit; Brighton Mills, Passaic, N. J.; Lockwood-Greene Co., Boston; Hudson Valley Fuel Corp., Troy, N. Y.; and Irving Trust Co., New York.

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H. F. Schiefer, formerly with the R. H. Beaumont Co., is now associated with the C. O. Bartlett & Snow Co., Cleveland, in connection with the sale of fuel and ash handling equipment and bulk material handling systems. Mr. Schiefer's headquarters will be at Cleveland.

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E. T. Weir, chairman of the board, National Steel Corp., Pittsburgh; George M. Verity, chairman, American Rolling Mill Co., Middletown, O.; and A. W. Robertson, chairman of the board, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., have been named members of a committee by the governor of the Fourth Federal Reserve district to aid in an extension of federal reserve credit.

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Dr. Robert F. Mehl, assistant director of research, American Rolling Mill Co., Middletown, O., has been appointed a director of the bureau of metallurgical research of the Carnegie Institute of Technology, Pittsburgh, effective July 1. A graduate of Franklin and Marshall college in 1919, he pursued his studies in chemistry and taught at Princeton and Harvard. In 1927 he joined the naval research laboratory, later going with the Rolling Mill company.

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William J. Meinel has resigned as vice president in charge of operations of the Edward G. Budd Mfg. Co., Philadelphia, to become vice president and general manager of the Heintz Mfg. Co., that city, effective June 1. The latter company was founded in 1922 by the late Leo I. Heintz, who previously had been production manager and a member of the board of directors of the Budd company. Mr. Heintz died in 1930. The president of the Heintz company is Frank W. Thacher, who was elected to this office May 1. The Heintz company produces formed and welded automobile body parts and other products, particularly parts in connection with electrical and dry ice refrigeration.

$54 for Soviet Steel Men

Highest trade union wages in Soviet Russia in 1931 were paid to workers in the machine-building industry, according to the USSR chamber of commerce, Moscow. The monthly average for 1931 was 120.87 rubles ($60), a gain of 30 per cent over 1928, with 136 rubles ($68) the planned wage for 1932. In the metallurgical industry, wages in 1931 were the fourth highest, being $54 a month or 26 per cent over 1928, with $61 the planned wage for 1932.

Obituaries

JULIAN KENNEDY, engineer and inventor, who in 1888 at the Homestead, Pa., works of Carnegie, Phipps & Co. Ltd. built the first commercial basic open-hearth steel furnace in the United States, died unexpectedly at Pittsburgh, May 28. Only a half month ago—on May 19—he was awarded the Gary medal of the American Iron and Steel institute for distinguished contributions to the industry.

Mr. Kennedy was born in Poland, Mahoning county, O., in 1852 and received his technical education at the Sheffield Scientific school, Yale university. Before going to college Mr. Kennedy had been a draftsman for his father in the construction of the Struthers Iron Co. Later he was an instructor of physics at the Sheffield school in 1876, and a year later became superintendent of the Brier Hill Iron Co.'s blast furnaces, Youngstown, O. Following he became affiliated with the Morse Bridge Works, Youngstown, O., and from 1879 to 1883 was blast furnace superintendent of the Edgar Thomson steelworks, Carnegie Steel Co., Pittsburgh.

In 1883 he became superintendent of the Lucy furnaces at Pittsburgh and in 1885 was made general superintendent of the Homestead steelworks, continuing until 1888 when he became chief engineer for the Latrobe Steel Works, then building a locomotive tire plant at Latrobe, Pa. Since 1890 Mr. Kennedy was engaged chiefly as a general consulting engineer and incorporated many of his original ideas into blast furnaces and steelworks both in this country and abroad.

His principal projects abroad were the design and construction of the steelworks and blast furnaces for both the Tata Iron & Steel Works, Sakchi, India, and the Nicopol-Maripol Mining & Metallurgical Co., Sartana, Russia.

He was a member of the American Iron and Steel institute, British Iron and Steel institute, American Institute of Mining and Metallurgical Engineers and a number of Pittsburgh and New York clubs. He was the recipient of many awards. Mr. Kennedy was president of a number of coal and coke companies including: Ontario Gas Coal Co., Lowber Gas Coal Co., Poland Coal Co. and the Orient Coke Co. Two sons and two daughters, all of Pittsburgh, survive. The two sons—Julian Jr. and Joseph—are associated with their father's engineering firm.

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John A. Drew, former general manager of the Worthington Pump & Machinery Corp., New York, with which and its forerunners he had been associated 60 years, died at Brooklyn, N. Y., May 25. He was 80.

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Howard D. Bonesteel, 52, president of the Troy Wire Co., Troy, N. Y., died May 29.

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William E. Hitchcock, 73, vice president and director of the Warner Gear Co., Muncie, Ind., died recently.

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John H. Friar, manager of the Milwaukee branch of the American Can Co. from 1901 until his retirement last October, died recently. He was 67.

Julian Kennedy

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Frederick McClain, associated with the late Julian Kennedy from 1900 to 1927 and widely known as a blast furnace and steel mill engineer, died in London, May 22. He was 69.

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James A. Sebastiani, 77, formerly secretary of the Cincinnati Iron & Steel Co., later absorbed by Joseph T. Ryerson & Son Inc., died May 30. He was first employed by the former Mitchell-Tranter Rolling Mill Co.

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William J. Akin, 78, formerly vice president and treasurer, Illinois Malleable Iron Co., Chicago, died in Evanston, Ill., recently. He had been identified with the company for 35 years, retiring three years ago.

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Charles A. Nordyke, 65, son of the founder of the Nordyke & Marmon Co., Indianapolis, manufacturer of machinery and later of automobiles, with which he was associated until illness forced him to retire, died recently.

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George W. Page, 51, vice president in charge of purchases and director of the W. A. Jones Foundry & Machine Co., Chicago, was killed May 29 in that city, by a fall from a window. He had been connected with the company for 33 years.

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Gilbert H. Lee, formerly chief engineer of the Columbia Steel Co., Butler, Pa., now a part of the American Rolling Mill Co., Middletown, O., died at Kramatorsky, Ukraine, Russia, May 11. Mr. Lee went to Russia for the Soviet government as a specialist in the production of flat-rolled steel.

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James A. Burden, 61, president of the Burden Iron Co., Troy, N. Y., died at his home at Syosset, L. I. He was born in New York. After graduating from Harvard university in 1893, he studied law there for a year. He then entered the iron business at Troy which bears the family name, succeeding his father as president in 1906.

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Joseph Obenberger, 78, pioneer drop forge industrialist of Milwaukee, died recently. Starting in business as a blacksmith, he later manufactured coal handling equipment. In 1902 he established the Joseph Obenberger & Son Co. Since his retirement from active duty in 1913 the business has been under the management of his son, A. Fred Obenberger.

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John C. Cromwell, 65, who achieved considerable publicity in the early days of the World war by purchasing 70,000 to 80,000 tons of steel car axles, for the allies, for the manufacture of shrapnel, died at Alton, O., May 31. He was a partner of the former Garrett-Cromwell Engineering Co., which developed a number of rolling mill improvements. In 1917 Mr. Cromwell organized the Cromwell Steel Co. at Lorain, O., which was dismantled after the war. He was a former president of the Alliance Machine Co., Alliance, O., and was the organizer of the Steel Sanitary Co., Alliance.

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Carlo Vanzetti, 66, director and general manager since 1894 of the Fonderia Milanese di Acciaco (Milano Steel Foundry), died in Paris, May 30. He was a director of many industries in Italy, including the Terni steelworks and the Quarnaro shipyards. For 28 years he has been a member of the advisory board of the Milano chamber of commerce. He was vice president of the Italian Association of Metallurgical Industries in Milano, and was decorated by the King of Italy for his successful direction of the International Foundry congress in Milano in September, 1931.

Here and There in Industry

PRESSED STEEL CAR CO., McKees Rocks, Pa., has installed a 1½-ton per hour electric furnace made by the Pittsburgh Electric Furnace Corp., Pittsburgh. The Pressed Steel Car Co. at present has two cupolas and four open-hearth furnaces and manufactures steel, gray iron and malleable castings. The smaller electric unit is intended to supply needs under reduced melting requirements.

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Borst Engineering Corp. will move its metal specialties plant from Buffalo to Angola, N. Y., about July 1.

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Wieman & Ward Co., coal and coke, 1844 Oliver building, Pittsburgh, has moved to 836 Oliver building. The company represents the Pleasant Valley Mining Co., Johnstown, Pa.

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Homestead Valve Mfg. Co. Inc., Coraopolis, Pa., has appointed the Lietz Engineering Co., 2354 Lincoln avenue, Chicago, its exclusive representative in the Chicago district.

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Beck Engineering Combustion Co., V. S. Beck president, has been organized at St. Louis to manufacture a low pressure gas burner. Five general types of conventional burners and some special types will be produced.

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John E. Livingstone Co., 2-246 General Motors building, Detroit, has been appointed sales agent for the hoist and crane division of Robbins & Myers Inc., Springfield, O., for Detroit territory.

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Gedge Bros. Steel Roofing Co. has been formed at Anderson, Ind., by Mead Day and Carter brothers and has bought the plant of the Gedge Bros. Iron Roofing Co. Additional equipment will increase production.

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M. W. Singer, recently secretary of Hausman & Wimmer Co., Pittsburgh, has formed M. W. Singer & Co., with offices in the Keenan building, Pittsburgh, to engage in the sale of iron and steel scrap.

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Harry Trottner Steel Corp., 935 East Sixty-third street, Cleveland, has been formed by Harry Trottner, who retired from the steel warehouse business two years ago after 17 years in that trade. He will specialize in steel sheets, strip and galvanized and terne plates.

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Despatch Oven Co., Minneapolis, has appointed Earl H. Seelbach, 381 Ellicott square, Buffalo, its district engineer, in charge of sales and engineering in the western portion of New York, including Rochester, and also Erie, Pa.

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Hamilton Metalplane division of the Boeing Airplane Co. and Hamilton-Standard Propeller Co. have abandoned headquarters at the Milwaukee county airport, Milwaukee. Parts and equipment have been moved to the plant of the Stearman Aircraft Co., Wichita, Kans.

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Ferro Enamel Corp., Cleveland, has added a design-counsel service to its facilities, in charge of R. Guy Cowan, formerly designer of pottery for his own company, Cowan Potteries Inc., Cleveland. The service is provided for the use of porcelain enameled ware manufacturers.

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Squardee Sash Mfg. Co., Charles Drill president, has been organized at St. Louis to manufacture a patented window sash designed to allow turning the window inside out for cleaning and for ventilation. It is capitalized at $50,000 and plans to build a plant to cost $25,000.

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Fairbanks, Morse & Co., Chicago, has moved its offices and repair department at Boston from 88 High street to 178 Atlantic avenue. The warehouse, formerly in Cambridge, Mass., has been consolidated with the repair department. L. B. Jackson is manager.

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Kieley & Mueller Inc., Newark, N. J. manufacturer of steam, water, oil and gas specialties, has bought a plant at 40 Paris street after being located for 53 years at 34 West Thirteenth street. An office will be maintained for the present at this address. The change was made to give better manufacturing and shipping facilities.

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Ross Heater & Mfg. Co. Inc., Buffalo, has appointed G. G. Van Tuyl, 3 Cardiff Park, Rochester, N. Y., its representative for western New York. Arno N. Dietze has been appointed representative in Milwaukee, with offices in the Security building. Gustavo Preston Co., Boston, has been made representative in Boston territory.

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Mossberg Pressed Steel Corp., Attleboro, Mass., has arranged with the McLeod companies, including Odell Mill Supply Co., Greensboro, N. C., Greenville Textile Supply Co., Greenville, S. C., Atlanta Textile Supply Co., Atlanta, Ga., and Browning-Roberts Belting Co., Knoxville, Tenn., to handle exclusive sales of its textile mill supplies in the South.

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Bastian-Blessing Co., Chicago, will vote June 15 on a proposal to acquire the business and property of the Russ Mfg. Co., Cleveland, manufacturer of soda fountains, and a change in capital to finance the purchase. Bastian-Blessing Co. manufactures welding supplies and gases.

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Manitowoc Engineering Works, Manitowoc, Wis., has been awarded the contract for a complete dryer works for the 1-story District D. D. incinerating plant at Stickney, Ill., for the Chicago sanitary district. The award was made by M. J. Boyle & Co., 105 West Monroe street, Chicago, general contractor. The Boyle company let the filter contract to Oliver United Filters Inc., Chicago.

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Wilson Welder & Metal Co., North Bergen, N. J., has appointed E. Walters its special agent in Chicago territory, with offices in connection with Joseph T. Ryerson & Sons Inc. This company has appointed the Magnolia Airco Gas Products Co., with headquarters in Houston, Tex., and branches in Fort Worth, Beaumont, El Paso and San Antonio, its exclusive distributor in Texas.

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Industrial Sales Co., Cincinnati, has completed its organization with W. F. Robinson, formerly with the Weir Kilby Corp., president; P. L. Bauer, formerly sales engineer for the Edwards Mfg. Co., vice president; Thomas L. Tallentire of the law firm of Tallentire & Barber, as counsel. It will act as manufacturers' representative for supplies and equipment for industrial, contracting and railroad lines in Cincinnati territory.

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Struthers-Wells Co., Warren, Pa., has appointed Byron L. Ashdown, Syndicate Trust building, St. Louis, its representative in mid-continent and central southern states on process equipment for oil refining, chemical and allied industries. The company has also appointed G. H. Gleason & Co., 25 Huntington avenue, Boston, its representative in New England on process equipment for paper and pulp, chemical and allied industries.

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Gilby Alloy Co. has been formed at Newark, N. J., with offices at 850 Mt. Prospect avenue. It is headed by Walter Gilby, formerly with the Driver Harris Co., Harrison N. J. and the Gilby Wire Co., Newark. The company is equipped for the manufacture of filament ribbon, nickel chrome and various alloys in resistance wire in flat, round and coiled elements. Mr. Gilby has been in this line of work 35 years.

MIRRORS of MOTORDOM

DETROIT

FOR A group which to outsiders appears flushed with a rate of activity not equaled since June or July, 1931, automobile manufacturers are peculiarly harassed. Probably never before have they been confronted with so many major decisions on policies, which for some may mean their very existence. And the essence of these policies is price.

There is a growing opinion that price not only is the major influence in the sale of automobiles today but also that it will continue dominant for a long time. For steel and other large suppliers of material this means prolongation at least of the present pressure upon prices—perhaps even an intensification of it.

Ever since the automobile industry attained its majority, which was shortly after the depression of 1921, it has been bearish on prices. Especially through the development of the continuous assembly idea has the industry reduced its own costs; it has expected its sources of raw material to parallel these savings.

Lower Wages; Fewer Cars

These sources of supply have made great strides toward more efficient and mechanized production, but in the past few years they have attempted to combat this pressure for lower prices with the contention that only by cutting wages can further economies be effected, and this in turn would tend to narrow the ultimate market for automobiles. Particularly now, with labor on part time and its wages reduced, is a commitment for a new car a hazardous one.

Were finished steel, for example, to be increased $2 per ton to the automobile industry it would prove a noteworthy tonic to balance sheets, it has been pointed out, without appreciably burdening the buyers. In the case of Ford, for example, a $2 advance on steel purchased on the outside would add about 75 cents to the cost of each car. For Chevrolet, which purchases all of its steel, the added cost probably would be $1.50, and for a car the size of the middle Buick about $2.

Such a $2 increase, producers maintain, would have no effect upon sales and would tend to lift steel out of its pit of starvation. Three men— Henry Ford, Alfred P. Sloan Jr. and Walter P. Chrysler—could decide upon a forward-looking policy for the automobile industry, but such a policy appears to be an idealistic dream. The tendency is the other way.

Management Must Pay

The attitude of the automobile industry is that further economies should be sweated out of management and not out of labor, and hence the maintenance of present wage levels in the principal supply industries coupled with steadier employment and lower prices for automobiles will stimulate sales and perhaps lead the country out of depression.

This stand Ford epitomized in pricing the new four and eight. Current prices were not predicated upon any definite basis of cost plus profit. Instead, these levels were gaged as ones that would attract a broad market and support a daily production rate of 5000 or more, with the onus on the production department of bringing costs into line.

This has stimulated at the Rouge plant the greatest wave of development in the history of the Ford organization, and a purchasing policy which has snuffed out any gestures for higher material prices. And in turn this policy colors the programs of the rest of the industry, excepting the extreme high-price range.

General Motors, for example, has new competition for its Chevrolet to face, and if it goes through with its program for a new low-priced six and eight no doubt it will attempt to clip pennies at every turn. Hudson-Essex has its new four in the offing; Chrysler may not be satisfied to rest its entire case on the Plymouth; Willys faces a crisis. All are scrutinizing every item of cost.

This department has maintained that there has been no low-price automobile, which was purely transportation, since Model T was dropped in 1927, and the automobile industry apparently is moving in force to fill this void. This is an additional reason for manufacturers to attempt economies.

A keen observer, noting the great unemployment among purchasing officials in Michigan, contends that these unemployed have dug their own graves. In previous depressions, when the railroads were heading consumers of iron and steel, commodity prices did not decline to relatively so low a level. The railroads were not disposed to depress prices below the basis paid by their competitors.

But this depression has been characterized by extremely low commodity price levels, which this observer attributes to the policy of the automobile industry. Its extreme pressure has intensified the depression, forced drastic retrenchment upon the industry and added to the ranks of the idle many who have been instrumental in beating down prices unduly.

Industry Is Unhappy

So far as major harassments are concerned, the Ford organization has extended itself as never before to whip the design of the new four and eight into shape, and now production methods are under scrutiny. A reorganization which eclipses anything previously undertaken is under way in General Motors. Willys has its troubles.

A number of smaller manufacturers

(*Please turn to Page* 47)

EDITORIAL

Certifying Quality Through Nondestructive Tests

IF INTEREST in inspection of ferrous materials by nondestructive methods continues to grow as it has in the last few years, important changes in specifications may be demanded by consumers. The subject is charged with so many possibilities for altering existing conceptions of quality and practice that it deserves widespread attention. Producers and users of castings, forgings and products of rolled steel should be especially interested.

The extent to which nondestructive testing now is being employed in industry was outlined clearly by Robert F. Mehl in a paper presented at the recent meeting of the American Iron and Steel institute. An abstract of it appeared on pages 29 and 30 of the May 23 issue of STEEL. The author's resume of current applications of magnetic, radiographic and sonic methods reflects the increasing tendency in industry to demand more positive proof of soundness in metals than is afforded in destructive tests.

Inspection always has been an important step in the production, fabrication and use of rolled, cast and forged metals. The array of tests employed to guard against defects not only is impressive, but it adds appreciably to the cost of the material. Through chemical and metallographic analyses, sulphur printing and deep-etch tests for segregation, tensile tests for strength and ductility, coupon fracture examination for structure, boring tests for soundness, hardness and microscopic inspection of finished articles and numerous other methods industry has gone to great lengths to insure high quality of product.

Evidence Obtained from Coupons and Samples Is Not Conclusive

Elaborate though they may be, these tests are not conclusive. Taken singly or in combination they serve only as indicators of quality. Most of these tests can be applied only to samples or coupons or to certain parts of the material actually used. They cannot furnish positive proof that a specific portion of a certain piece is sound.

The need of nondestructive tests was apparent many years ago. Examination of hoisting cables by magnetic methods was practiced as early as 1908. P. H. Dudley's work in the testing of steel rails, as outlined in *Iron Trade Review* in 1919, was an early indication of the need of more positive tests. Later the necessity for guarantees of soundness in chain, turbine bucket wheels, ball bearings and raceways, springs, propellers, etc., hastened the development of nondestructive testing methods.

However, in the past few years the greatest factor has been welding. When this process began to sweep through every branch of the metalworking industry, there was a united demand for proof that welds were sound. Coupon tests were not considered sufficient. Belief that the quality of welds depended largely upon the skill of the operator caused users of welded parts to seek a test that would check the element of human error.

Advance in Radiographic Methods May Affect Specifications

The response to this situation was an almost immediate spurt in activity in testing by radiographic methods. The X-ray, an old device but not practical in the metallurgical industries prior to 1915, was improved to a marked degree. Better equipment—particularly tubes, higher voltages and special devices for improving the quality of radiographs were the most notable advances. The use of gamma rays from radium was introduced less than three years ago. Its advantages of portability, flexibility and apparent reasonable cost are attracting widespread attention. Radiography employing a fluorescent screen, while thus far used more extensively in Germany than in this country, may gain popular favor.

Broader application of radiography is certain to bring about simplification and refinement, and perhaps lower costs. Once it is firmly established, purchasers of rolled steel, forgings and castings for exacting use or where safety is an important factor undoubtedly will demand radiographic certification of soundness. This may affect certain existing practices in production. Greater emphasis will be placed on the ever-present problem of clean metal. The war against inclusions, blowholes and other defects will be intensified. In some cases designs of parts will be altered. It will be advisable for producers, fabricators and manufacturers interested in ferrous materials to keep close watch of developments in nondestructive testing.

THE BUSINESS TREND

Committees Will Try To Restore Confidence

WITH congress nearing the time for adjournment speedy action on the remaining urgent legislation should be expected. However, after speeding up and finally adopting the tax bill, the senate immediately began to stall on economy legislation. Apparently it will be necessary for the public to apply the whip freely.

Assuming that the revenue bill will go to the president substantially as it was adopted by the senate, that from $300,000,000 to $400,000,000 will be pared from government expenses and that a compromise relief bill will be enacted, when congress adjourns there will be no further excuse for blaming the stagnation of business on the misdeeds of congress. With a balanced budget in sight, will industry again start toward the road of recovery?

No one knows the answer to this question. Too many uncertain factors still cloud the business horizon. But barring serious developments abroad, the chances for early improvement are good.

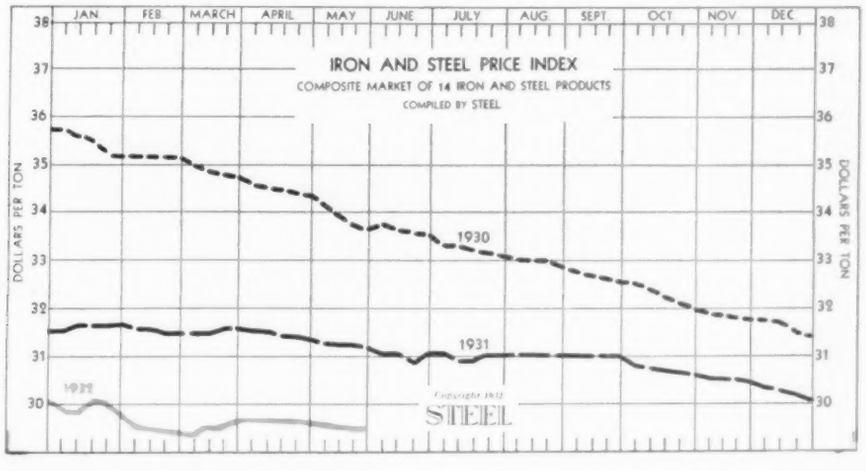
One of the immediate uncertainties is the credit situation. The banks admit that they have funds available for use. It is claimed that some banks, having been saved from embarrassment or even disaster by the Reconstruction Finance Corp., now are refusing to grant loans to industry for legitimate purposes. On the other hand there is indisputable evidence that many banks are desirous of making loans but are unable to do so because industry does not wish to borrow under present conditions.

Bolstering of Bond Market May Be One of First Objectives

This is the situation which challenges the Young committee and the other similar committees being formed in each reserve district. In the fourth federal reserve district three steel men are on the committee.

One of the early objectives of these committees will be the formation of a pool to support the bond market. The opportunity for restoring confidence through this and other means has been improved by the settlement of the tax problem. The influence of the indusrial-financial committees is great. If it can be mobilized for harmonious action the results should be gratifying.

Business still is drifting aimlessly, but weekly and monthly records pale into insignificance before the importance of broad national problems, the solution of which is necessary before confidence can be restored. Fortunately powerful machinery for their solution now is functioning.

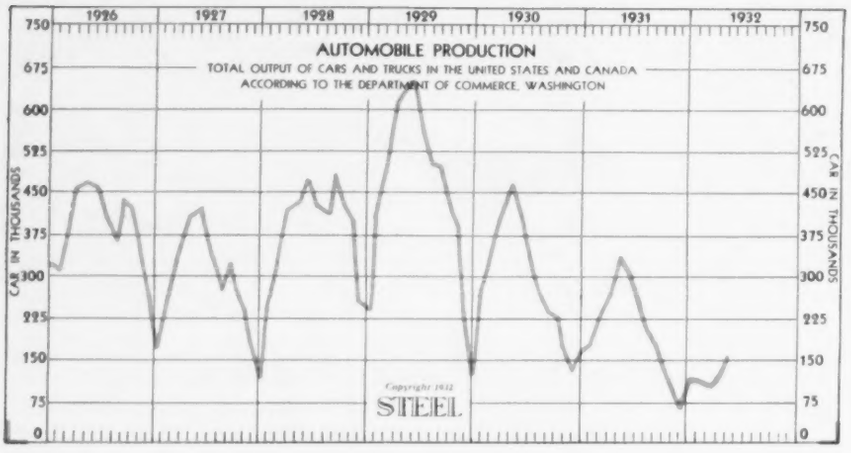


1932

May 28	$29.57
May 21	29.58
May 14	29.64
May 7	29.68
Apr. 30	29.70
Apr. 23	29.74

1931

May 27	$31.33
May 20	31.37
May 13	31.37
May 6	31.40
Apr. 29	31.49
Apr. 22	31.51



April, 1932	154,823
March, 1932	127,277
April, 1931	354,098

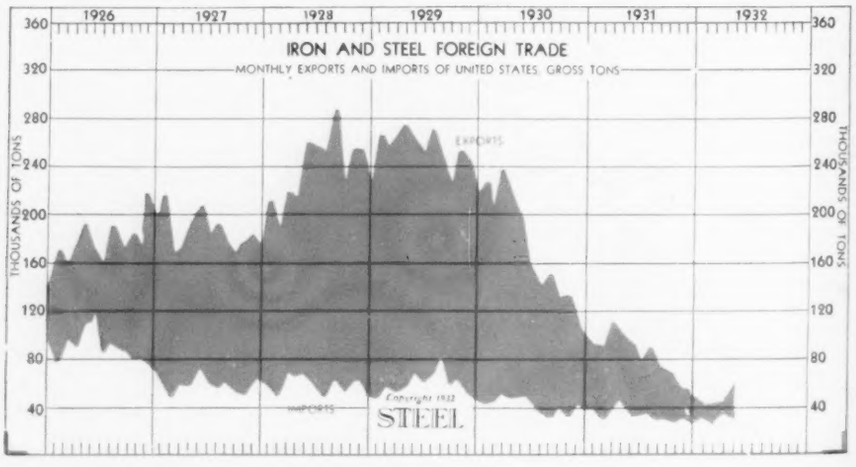
Automobile Output Up in April As Schedules Are Increased

Production of passenger and commercial motor vehicles in the United States and Canada in April totaled 154,823 units, a sharp gain from the level of 127,277 established in March. According to the monthly report of the United States department of commerce, April output embraced 126,501 passenger cars, as against 107,643 in March and 354,098 in April last year. Truck output for April totaled 28,291 compared to 53,138 units for the same period last year. April is usually the peak month in the automobile industry, but with output continually being increased at the Ford plant, it is evident that this year the maximum output will occur later.

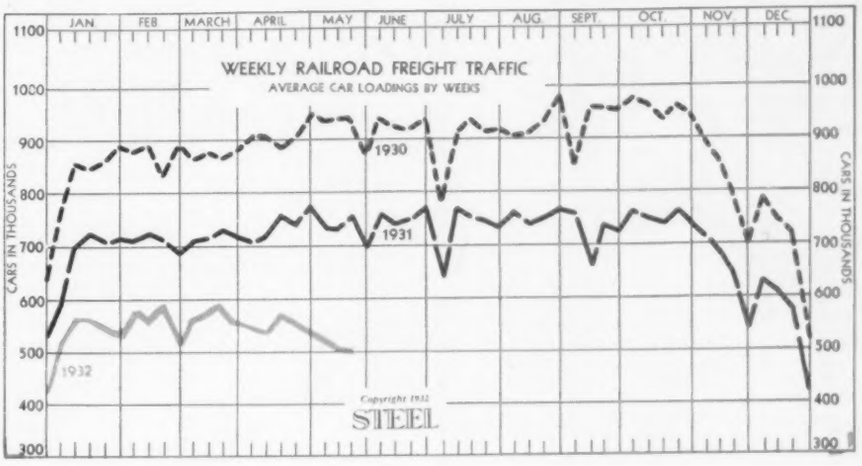
Export Trade in Iron and Steel Gains As Imports Drop

Exports of iron and steel products in April at 58,118 gross tons showed an increase of 8191 tons, or 16.6 per cent. Imports declined from 41,031 gross tons in March to 36,339 tons in April. Thereby, the trade balance as to iron and steel, which was almost obliterated in March, became more firmly established. The export trade in April was featured by the heavily increased purchases of iron and steel scrap by Japan, which displaced Canada as our leading market. Canadian purchases totaled 13,874 tons, while Japanese takings were 18,903 tons. Thus far in 1932, exports total 189,197 gross tons, compared with 394,638 tons a year ago

Exports	Tons
April, 1932	58,118
March, 1932	49,927
April, 1931	101,434
Imports	
April, 1932	36,339
March, 1932	41,031
April, 1931	47,872



	1932	1931
May 21	515,450	754,738
May 14	517,667	747,057
May 7	533,677	745,740
Apr. 30	554,012	774,742
Apr. 23	562,380	758,503
Apr. 16	566,729	759,494

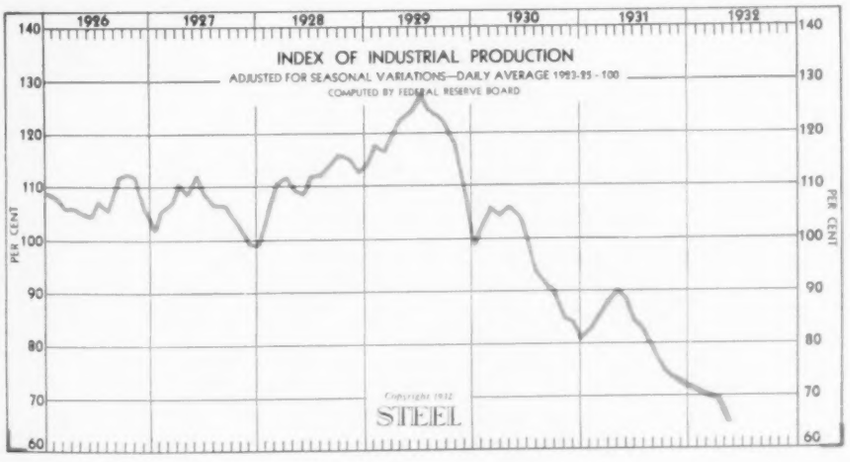


Volume of Freight Traffic Again Declines to New Low

Loadings of revenue freight for the week ending May 21 totaled 515,450 cars, according to the report of the American Railway association. This is a decrease of 2217 cars in comparison with preceding week and a reduction of 239,288 cars compared with the corresponding week of 1931. In contrast with the figures for the week ending May 14 when all classifications recorded decreased loadings in comparison with the previous week, the current report shows an expansion in shipments of miscellaneous freight, ore and coke. Loadings so far this year have aggregated 11,135,554 cars compared to 14,649,656 in the same period of 1931 and 17,845,774 in 1930.

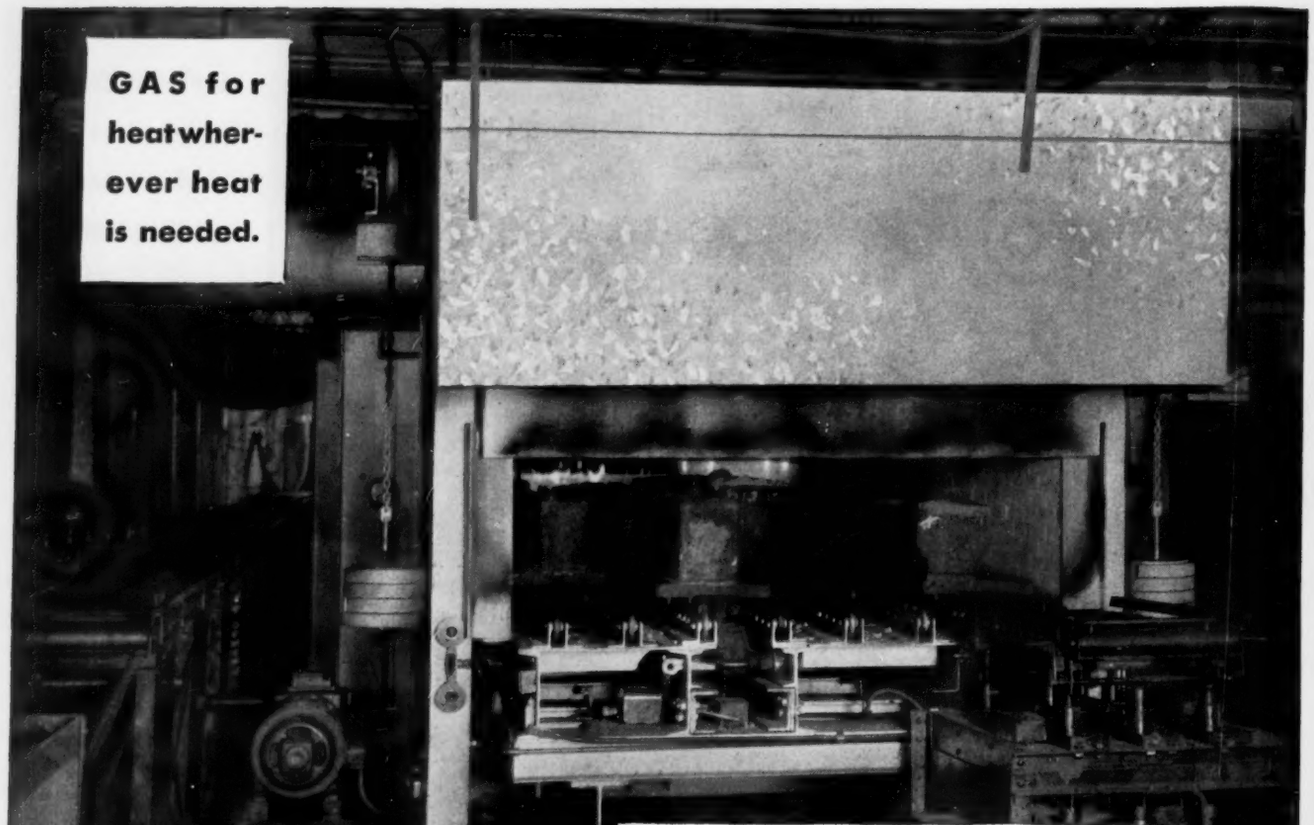
Index of Industrial Production Reflects Uncertain Trend of Business

The Federal Reserve board's index of industrial production continued to sink to new low levels. The report for April was down three points to 64 from the revised index for March. A year ago a gain from 87 to 90 took place and two years ago the index was up one point to 107. Among the component parts of the index, manufactures dropped two points to 62 with adjustment for seasonal variation. Building construction remained steady at 26 in value of contracts awarded. In the manufacturing group iron and steel was off two points to 32, textiles dropped 16 points to 66, leather and shoes dropped 2 points to 90, while automobiles gained from 28 to 35.



April, 1932	64
March, 1932	67
April, 1931	90

Gas HEAT for CARBURIZING



THE modern gas-fired carburizing furnace has solved many a knotty production problem. The magazine "Industrial Gas" may help you solve your problems. Send for free copy.

AMERICAN *Gas* ASSOCIATION
420 Lexington Avenue, New York

FORD Improves Metal Fabricating Processes

BY E. F. ROSS
Associate Editor, STEEL

The welded all-steel body of a two-door sedan being lowered onto the chassis of a V-8 on the assembly line

WHEN in 1927, Henry Ford introduced Model A he not only pioneered a higher standard of quality in the low-priced automobile field, but he also pioneered in the development of production processes, chiefly metal-working. It is to be recalled that his methods of manufacturing were as radically different from former methods as was Model A different from the old Model T. The new car was as nearly an all-steel job as any could be and to turn it out within the Ford Motor Company's long established price range necessitated discarding of many orthodox processes and initiation of new ones.

Now, just five years later, Mr. Ford abandons Model A and replaces it with two new models, one a V-8 and the other an improved four, known as Model B. With this change naturally arises the question of "What has happened in production processes? Have Modal A methods been continued, have they been improved, or have new ones been devised?" The answers to these questions seem to be that some of the former methods have been cast aside altogether, others have been retained but considerably further developed and many more of revolutionary character have been adopted. With this article as an introduction and with succeeding articles to appear in early issues of STEEL, it will be the purpose to describe the processes now in vogue and where possible to compare them briefly with the former practice.

One of the many employe parking spaces around the Rouge plant which serve as barometers of Ford activity

At the outset, it should be pointed out that except for the power plants and certain minor parts, the V-8 and 4-cylinder models are alike. Therefore, mass production of all parts can be carried out to the maximum degree. The new eights weigh about 130 pounds more than Model A and the fours about 60 pounds less, but with the engines being heavier and using more gray iron castings and with a somewhat increased use of malleable castings in the hubs and differential housing or banjo, the use of steel remains practically equivalent with Model A. Practice initiated with Model A included increased use of steel stampings and pressed metal parts, forgings and hot spun parts, in many cases joined into single units by various forms of

electric welding. This is essentially the practice today, except that hot spinning, a notable achievement in 1927, has been thrown out entirely. There is a considerable increase in pressed metal and formed parts, some increase in forgings, and a most notable development in welding processes for joining the parts.

Uses Three Types of Welding

Three types of electric welding are used in the Ford plant, namely, resistance flash welding, spot welding and arc welding. In flash welding, heat is supplied from an arc drawn between the edges to be welded. As the metal will not heat sufficiently to weld quickly except through the resistance of the arc, it is necessary to have the pieces of uniform size or nearly so. The copper jaws, in nearly all cases water cooled to prevent overheating and burning, supply the current to the pieces to be welded and control the heat at the weld. Therefore, their distance from the weld should be uniform in all directions and on each piece.

The amount of flashing of the metal is determined by experience, and, if correct, produces an area of metal in the two pieces to be joined that has been protected from oxygen of the air and other impurities by the arc and has been heated from the inside out, speedily to correct welding heat. Now comes the forcing or squeezing of the two pieces together very quickly and at the same time to remove them from the heating element by an ingenious toggle action of enormous power. This squeezing forces out any overheated metal that may be left, allowing the good clean virgin metal to make the contact.

THIS is the first of a series of articles describing metalworking methods used by the Ford Motor Co. in building its new automobiles. Subsequent articles will explain details of various processes.

Much Spot Welding Done

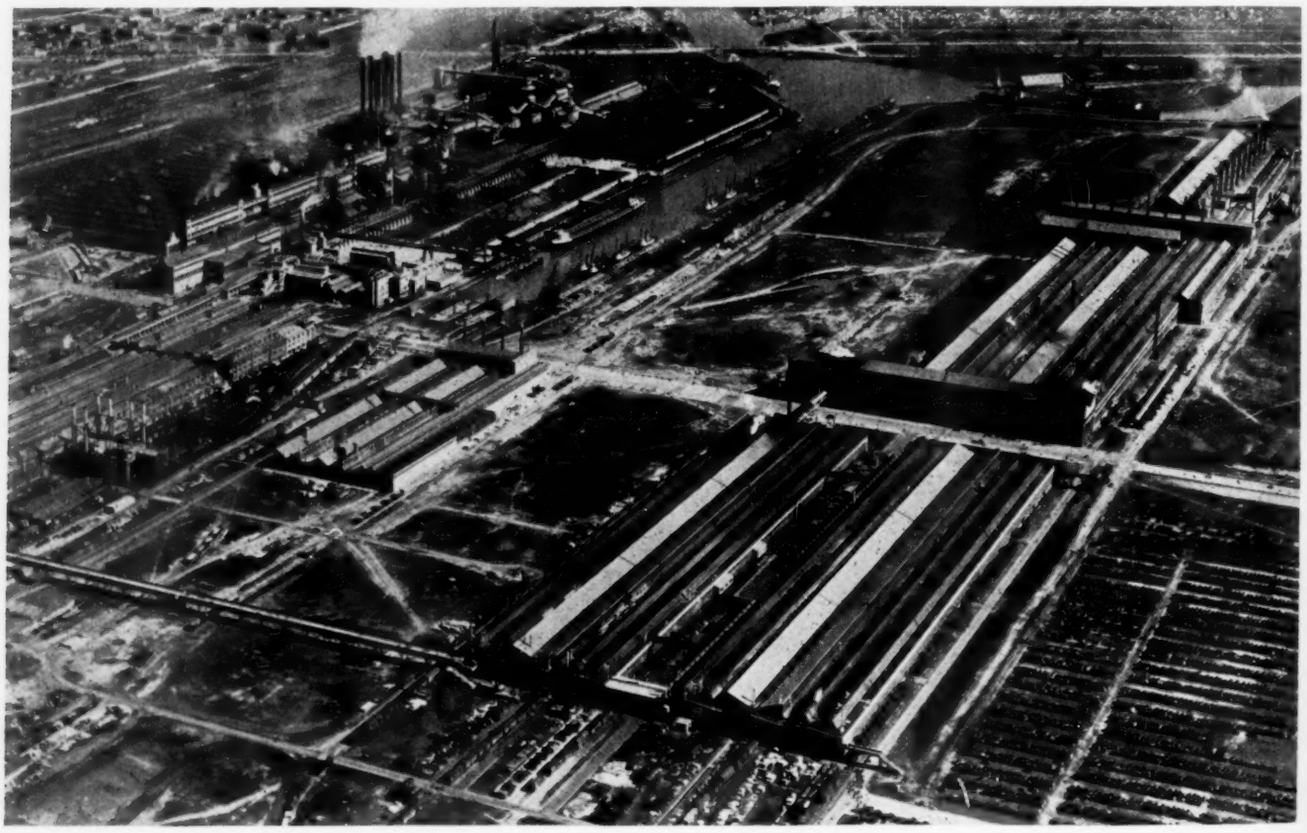
Flash welding accomplishes a butt weld; spot welding, on the other hand, produces a lap weld. The two pieces of metal to be welded are placed one over the other and held under pressure between two copper electrodes. When current is passed between the electrodes, the resistance of the metal creates sufficient heat to fuse the two pieces together. Spot welding is of two types; it may consist of a series of individual spot welds, or a continuous weld in which the electrodes in the form of disks move continuously over the work.

Arc welding is simply attaching two pieces of metal together by deposit-metal from an electrode, the electrode being melted in the arc struck with the base metal.

Equipment Made Automatic

With the introduction of Model A, all of these processes found use, but considerable of the equipment was semiautomatic in nature. Today, practically all of it is automatic or as nearly so as present knowledge permits. Almost without exception, the copper electrodes are cooled by water circulating within them, and once the electrodes are clamped in position and the current turned on, the cycle of heating, current turnoff and application of pressure is performed mechanically, thereby eliminating the human element as a factor in weld quality. Furthermore, the company has designed its own welding machines and in most cases has built the equipment.

In its forge department, the Ford company has improved and simplified its production of steel forgings. Numerous parts formerly made under the hammer now are produced by pressure methods; likewise, there is a tendency toward the utilization of the extrusion process. Extruded forgings show essentially the same tensile strength as hammer forgings, but in fatigue strength they appear



A recent airplane view of the Rouge plant of the Ford Motor Co. at Dearborn, Mich. The blast furnace stacks and foundry are to be seen in the upper left-hand corner and the steelworks and rolling mill in the upper right-hand corner

far superior, furthermore, they can be made with considerable economy in stock.

Upsetting is a process widely used and for one part, the rear axle shaft on which the pinion gear blank is formed by upsetting operations, a new installation provides for continuous and automatic production. Round bar stock fed into a continuous electric furnace by an operator is heated and without further human assistance passes to the upsetter and after four consecutive operations is discharged by conveyor.

Die Typing Is Developed

By a method developed during the past two years, the company has effected considerable economy in the production of dies for pressure forging as well as dies for molding nonmetallic parts. This method, known as die typing, consists of pressing a master die into a heated die block and one master is capable of making 500 good types. By carrying the process further, each typed die can be used in making from 200 to 1000 retyped dies and these are used for the actual production work. Typed dies show appreciably longer life in service than dies made by the usual die sinking methods.

For heating work preparatory to forging and for heat treating operations electric furnaces are utilized as far as possible. Most of these units are heated with water-cooled nonmetallic resistors, are of high capacity and are of the continuous type. Heat treating operations are carried on in the line of production, instead of in separate heat treating departments, a feature which promotes the continuous flow of work and eliminates back-tracking.

Likewise, pickling of forgings is handled in continuous totally-inclosed pickling machines recently installed in line of production. A complete elimination of acid fumes is accomplished by passing the forgings into and out of the machines through water seals. The seal at the exit end of the machine also serves as a rinse tank.

Disassembling 200 Cars Daily

With the completion of its new 400-ton open-hearth furnace early this year, the Ford company has revamped its disassembly line and at present is remelting daily 200 junk cars in this furnace. These cars, completely stripped of tires, engines, glass, upholstering, wiring, nonferrous metals and other salvagable parts on a moving conveyor line are compressed into bales approximately 6 feet long, 3 feet wide and 15 inches thick, and carried by conveyor to the charging floor. Model T engines are completely disassembled and remelted in the foundry.

(To be continued in an early issue)

Iron and Steel Electrical Engineers Mark Quarter Century at Meeting

WITH its convention and exposition to be held in the William Penn hotel, Pittsburgh, June 20-23, the Association of Iron and Steel Electrical Engineers marks the twenty-fifth anniversary of its organization. During the four days, technical sessions will be conducted by the mechanical, electrical, lubrication, combustion and safety engineering divisions.

The exposition will be open between the hours of 1:30 and 5:30 p.m. and 7:00 and 10:00 p.m. on each of the four days. Social features of the convention include an informal reception for members, exhibitors and guests on the evening of June 20 and a formal reception on the evening of May 23, both to take place in the ballroom of the hotel.

The program for the technical sessions has been announced as follows:

Monday, June 20

MORNING

Business session.

Technical Session

"Electrical Developments in the Iron and Steel Industry," by W. H. Burr, electrical superintendent, Lukens Steel Co., Coatesville, Pa.

"Progress in the Electrical Welding Science," by G. E. Doan, associate professor, metallurgical engineering department, Lehigh university, Bethlehem, Pa.

"Substitution of Fabricated Steel for Castings," by W. E. Watson, Youngstown Welding Co., Youngstown, O.

"Deseaming of Slabs," by J. F. Lincoln, president, Lincoln Electric Co., Cleveland.

EVENING

Official opening of Iron and Steel exposition in William Penn hotel.

Tuesday, June 21

MORNING

Electrical Engineering Division

"Standard Control Apparatus," by E. L. Upp, electrical superintendent, National Tube Co., McKeesport, Pa.

"Ladle Crane Practice in the Iron and Steel Industry," by F. W. Cramer, chief electrical engineer, Republic Steel Corp., Youngstown, O.

"Electron Tube Applications in Steel Mills," by T. R. Rhea, General Electric Co., Schenectady, N. Y.

"Devices Actuated by Light," by A. F. Corby Jr., Weston Electrical Instrument Corp., Philadelphia.

"Profitable Uses for Electronic Devices Responsive to Light in the Iron and Steel Industry," by W. B. Shirk, steel mill engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Wednesday, June 22

MORNING

Electrical Engineering Division

"Design and Performance of a Fully-Compensated Direct-Current Machine and What It Means to the Steel Industry," by M. E. Thompson, consulting engineer, and I. S. Nippes, electrical engineer, Elliott Co., Ridgway, Pa.

"Determination of Motor Capacity for Main Roll Drives," by H. A. Winne, industrial engineering department, General Electric Co., Schenectady, N. Y.

Combustion Engineering Division

"Water-Cooled Furnaces for Steam Boilers," by H. J. Kerr and R. M. Hardgrove, Babcock & Wilcox Co., New York.

"Development of Air-Cooled and Insulated Refractory Walls," by R. C. Denny, consulting engineer, and R. D. Foltz, vice president, M. H. Detrick Co., Chicago.

"Influence of Atmosphere and Temperature on the Behavior of Steel with Respect to Scale Losses," by Dr. D. W. Murphy, University of Michigan, Ann Arbor, Mich.

AFTERNOON

Combustion Engineering Division

"Maintenance and Care of Recording Instruments Used in the Steel Industry," by Martin J. Conway, fuel engineer, Lukens Steel Co., Coatesville, Pa., and R. C. Kennan, service engineer, Brown Instrument Co., Philadelphia.

"Fuel Economy Under Curtailed Operating Conditions," by H. Dobrin, consulting combustion engineer, Pittsburgh.

"Higher Steam Pressures in the Blast Furnace—Steel Mill Power Plants," by Charles W. E. Clarke and Walter P. Gavit, United Engineers & Constructors Inc., Philadelphia.

Thursday, June 23

MORNING

Lubrication Engineering Division

"Lubrication and Lubricants for Roll Necks," by Walter D. Hodson, president, Hodson Corp., Chicago.

"Micarta Roll Neck Bearings," by W. B. Shirk, steel mill engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

AFTERNOON

Lubrication Engineering Division

"Reducing the Bearing Cost Per Ton of Steel Rolled," by K. T. MacGill, Joseph T. Ryerson & Son Inc., Chicago.

"Celeron Bearings for Roll Necks," by A. J. Schmitt, Continental Diamond Fibre Co., Newark, Del.

"Nonmetallic Roll Neck Bearings," by R. R. Titus, president, Synthane Corp., Oaks, Pa.

"Lubrication Question Box," dealing with cranes, roll necks, filtering apparatus and lubrication devices.

Lead-Coated Drums Handle Acids

A new type of lead-coated steel drum of 10-gallon capacity for handling, shipping and storing acids has been designed by the Gross Engineering Corp., 3955 West Twenty-fifth street, Cleveland. The drum

conforms to the 5-A specifications of the interstate commerce commission bureau of explosives for use with sulphuric acid of all strengths, battery acid, electrolyte acids and hydrofluoric acids, as well as for phosphorus liquid compounds, bromine and other liquids which do not attack lead.

The outer shell is of heavy sheet steel, welded at all seams. The interior is covered with lead by means of the company's leadhesion process in which the steel surface to be protected is first treated with a special liquid, then immersed in pure molten lead. This produces a thin adherent lead film on which the requisite additional thickness is built up. The coating is claimed not to buckle, strip or crack under mechanical stresses, expansion or contraction, pressure or vacuum, or any temperature short of the actual melting point of the lead. All inside joints are made firm by being solidly burned together.

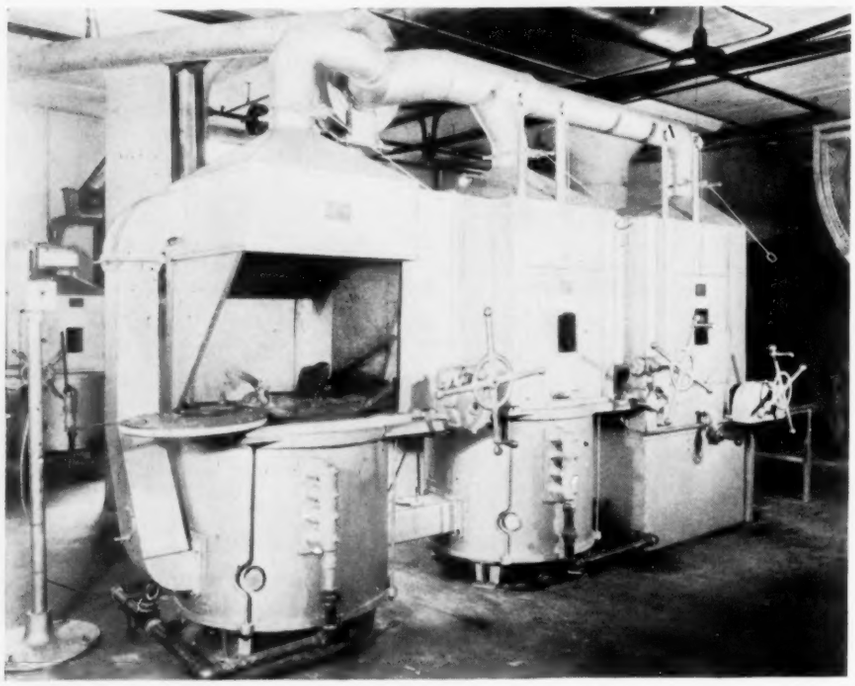
The outlet or outlets from which the acid is poured are renewable, being made in two parts united by a threaded joint, a thick coating of lead being put on the inner sides exposed to the acid. Should the outside of the lip become corroded, it is a simple matter to remove the upper section and substitute another, then to replace the coating by lead burning.

The drum can be handled safely by rolling, slinging, skids, or other usual methods. Safety is assured because the threaded cap cannot work loose. Sizes larger than 10 gallons can be supplied.

Improvements Made in Automatic Pot Furnace for Heat Treating

TO FACILITATE stepping up production in the plant of a prominent manufacturer of bearings, Parker-Kalon Corp., New York, has introduced innovations in the hyro-automatic pot furnace for case hardening and heat treating by liquid bath processes, using cyanide, lead and similar materials.

One feature of the furnace is its utilization of waste heat gases for drying and preheating the work before it is introduced into the bath. This permits the temperature to be retained within fixed limits and eliminates the undesirable feature of chilling the work. This preheating attachment, together with refractory lined connecting tunnel conducting heat from the bath, is shown in the accompanying illustration. From left to right in the illustration are shown the preheating unit, the cyanide bath unit and the quenching unit.



Front view of convertible basket and rack type furnace used for cyanide hardening. In the left foreground is the preheating unit, while at the extreme right is the quench

This is a convertible basket and rack type furnace arranged for basket work. Additional heat for drying basket work can be supplied by extra burners provided in the preheating furnace. On standard basket-type furnaces the preheating device may be arranged in the form of a loading bucket placed above the exhaust flue of the furnace, eliminating a separate preheating furnace.

Quenches Work Vertically

A further advantage of the furnace is its ability to quench work vertically, thereby minimizing distortion. This feature is claimed to be particularly important since it allows the replacement of oil quenching, a costly operation because of the necessity for subsequent washing, with water quenching. Being of the convertible basket and rack type, the furnace is advantageous to the bearing manufacturer in that it provides a flexible production, the change from basket to racked or fixture work or vice versa being made in about 15 minutes.

New York Exhibit Will Show Advance in Design

Since the National Alliance of Art and Industry announced its exhibit of three-dimensional objects designed for commercial production, it has received many entries from many fields. This exhibit, to be known as "The Designer and Industry" opens on June 20 in the Art Center building, 65 East Fifty-sixth stréet, New York, and will continue throughout the months of July, August and September

The purpose of the exhibit is to provide an opportunity for manufacturers and industry to demonstrate to their consumers the advance of design. Nationally known designers are co-operating in the exhibit and certificates will be awarded for beauty and utility in the various classes of objects. All three-dimensional objects designed for machine production are eligible for entry, with exception in the case of furniture.

Through co-operation of the American Management association, a series of lecture conferences on "The Economic Importance of Re-designing" will be held on the evenings of June 28 and 29.

Alon Bement, 65 East Fifty-sixth street, New York, is director of the National Alliance of Art and Industry. Among representatives of the steel industry on the advisory committee are Carl Black, sales manager, American Can Co., and C. J. Sharp, assistant general sales manager, Acme Steel Co.

Residual Chromium in Open-Hearth Charges Decreases

METHODS employed to control the chemical constituents of open-hearth heats at the various independent shops in this country were widely discussed by members of the open-hearth committee of the American Institute of Mining & Metallurgical Engineers attending the second session of the fifteenth semi-annual meeting, Pittsburgh, May 24-25. Details of open-hearth practice discussed at the opening session, May 24, were presented in last week's issue of STEEL.

Comments established the fact that numerous open-hearth plants in this country are equipped with carbometers for securing preliminary carbon analysis of heats. At a 12-furnace shop in Ohio a carbometer is installed at each end of the open-hearth floor. The melter operates the machine and the determination is made in about 6 minutes. Mention was made that some operators estimate the preliminary manganese from the iron oxide in slags. While this method gives an indication of the manganese content, most operators expressed the opinion that the procedure involves too many inaccuracies.

Carbon Percentage Varies

In discussing the advantages of making chemical determinations from test samples killed in the spoon, one operator emphasized that a difference in the carbon percentage may be as high as four points between killed and nonkilled test samples. At his particular shop where two tests were taken from the same heat and aluminum used in the one sample but not in the other, the killed steel analyzed 0.075 per cent carbon and the nonkilled drillings 0.055 per cent carbon.

A wide range exists at most plants from the time the test sample is taken until the preliminary analysis is returned by the laboratory to the melting floor. Some plants get a report from their chemists in about 6 to 8 minutes; other from 15 to 18 minutes, which includes drilling of the sample and a combustion carbon; and many plants between these ranges. Samples in many cases are cooled in water to which soap has been added. At one particular plant a splash test is taken which consists of pouring the steel from the spoon on a plate ¼-inch thick, catching the splash in a tray, pulverizing the globules in a mortar with a pestle and then analyzing the sieved sample. This applies to nickel-chrome heats. While the speaker claimed satisfactory results yet the accuracy of the method was questioned by another operator.

Effect of high copper or brass in scrap on open-hearth furnace bottoms, varies at different plants. At one shop where the furnaces have 5 or 6 inches of chrome ore on the bottom and the charges are proportioned with 65 per cent automobile scrap and 35 per cent pig, there have been no signs of lead in the bottom nor any bad effects on the quality of the heats, based on a campaign involving 20,000 tons of automobile scrap. Observation cited by another open-hearth superintendent, however, were that where heats are high in copper, trouble has been experienced in spot welding the finished steel.

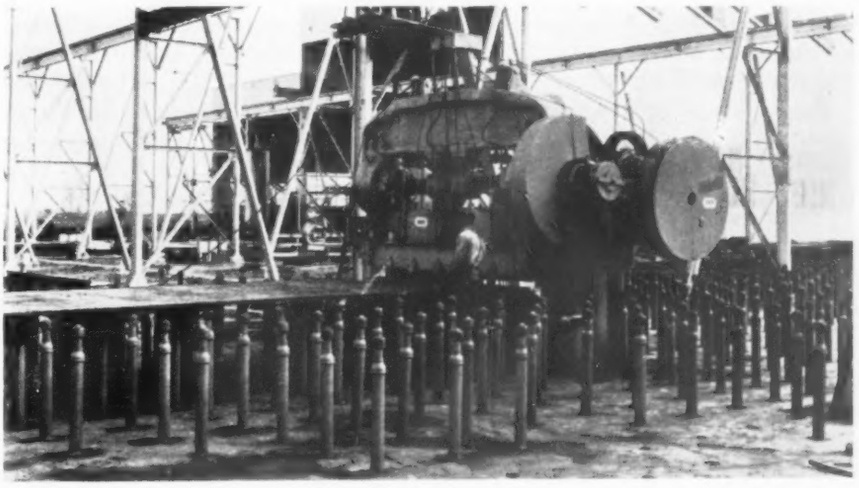
Effects of Reduced Wind

On account of many blast furnaces in the industry smelting with reduced wind the question was raised as to what, if any, effects the quality of iron made under reduced blowing has had on open-hearth melting practice. Remarks of one open-hearth superintendent indicated that iron made on reduced blast has a greater tendency to skull in the ladle. At his particular plant the quantity of fuel oil used in the mixer to keep the molten metal at the desired temperature, shows a large increase. At another plant the practice involves filling the mixer to capacity and then slow down the blast furnace for a short time. The stack serving this particular open-hearth shop is operated at near normal for a period of 18 to 24 hours and then put on slack blast for a period of 6 to 12 hours.

Four Elements Show Increase

Analytical determination of the residual metals in open-hearth steel made at the Battelle Memorial institute, Columbus, O., and presented at the open-hearth meeting, disclosed many interesting sidelights on the use of automobile scrap. During the period August 1931 to January 1932 eighteen companies co-operated in sending samples. Results of analyses of samples representing 8½ million tons of basic open-hearth steel show a slight increase over the previous period for residual tin, manganese, nickel and copper, and a fairly large decrease for chromium. The average for 11 plants that have co-operated in all five periods since the work was inaugurated, shows a slight increase over the previous period for tin, manganese, and nickel, a more marked increase for copper and a noticeable drop in chromium.

A questionnaire was sent to each of the contributing companies requesting information as to whether more or less automobile scrap was used during the period August 1931 to January 1932 than normally; and for information regarding the ratio of scrap to pig iron used. On the basis of 11 plants replying, four stated that more automobile scrap was used during this period than normally and seven reported that either no atuomobile scrap was being used or a lesser amount than normally. Three plants reported an increase in the ratio of scrap to pig iron for August 1931 to



HEAVY PLATES HANDLED ON BALL TRANSFERS: Several hundred heavy-duty ball transfers are used to handle steel plates to and from this shear in the plant of the Consolidated Steel Corp. Ltd., Los Angeles. The ball transfers are products of Mathews Conveyer Co., Ellwood City, Pa., and comprise lengths of steel pipe, each of which is fitted with a cap containing a hardened steel ball, 2 inches in diameter, which rests on a number of smaller steel balls and is free to rotate in any direction. The plate shown is 1 inch thick, 8 feet wide and 30 feet long, weighing about 10,000 pounds, and is handled easily by the two shear operators

January 1932 over the period March to July 1931; two plants reported a decrease in the ratio, and six plants indicated the same ratio.

For the four plants using more automobile scrap, 68.7 per cent of the analyses for the four elements, namely nickel, copper, tin and chromium, increased; 18.8 per cent decreased; and 12.5 per cent remained the same. For the seven plants in which less or no automobile scrap was used, 28.6 per cent increased; 67.8 per cent decreased; and 3.6 per cent remained the same.

Essential details to be considered in the making of rimming steel with particular reference to the adverse effect exerted by hydrogen, were discussed at length by Henry D. Hibbard, consulting metallurgical engineer, Plainfield, N. J. Dr. Hibbard's comments were presented in last week's issue of STEEL.

Heating Is Important

More attention will be given to the heating of steel in the next few years than is now done, according to the comments of one open-hearth superintendent, for therein lies the answer to defects, he stated. He attributed the formation of snakes to cracked molds and mentioned that this particular defect shows up more at his plant on killed steel than on low-carbon heats. While the snakes can be seen on the ingot yet this particular defect does not show up until after about 50 per cent of the steel has been rolled on the mill. In the opinion of this particular operator iron oxide has a lot to do with the location of blow holes; in fact, more than gases.

Research work on the observation of open-hearth steel and the effect of slags on the manufacture of steel was summarized by C. H. Herty Jr., United States Bureau of Mines, Pittsburgh. The kind of slags formed, how they shape up and the kind of deoxidizers used have a large effect on the physical values of steel. In discussing impact testing the speaker mentioned that different structures of normalized steel are obtained with the same manganese and carbon content. He cited variations in the relationship between ferrite and transverse impact mentioning that this variation was due to manganese, extreme banding and phosphorus. Oxide in solution and the use of aluminum exert an influence on the ability of the steel to respond to heat treatment, he explained, which of course ties back to slags and the deoxidizers in the melting process.

Dr. Herty, by means of a chart and numerous photomicrographs explained experiments now being made with triple alloys on rimming steels. Low-carbon heats were killed with these alloys and determinations made in an endeavor to discern whether the inclusions were as large as those encountered when double alloys are employed. The reason for using triple alloys, he explained, is to knock the bath dead without exceeding the top limit of the manganese range.

The quality of low-carbon rimming steel ingots is best maintained when poured through a 1¾-inch nozzle whereas the best surface is obtained with a 2-inch nozzle, according to various operators. One superintendent, however, declared that ingot surface and interior quality depends in a large measure on the size of the ladle used and the tonnage of the heat.

Clay brick are used for checker chamber linings and silica brick for lining slag pockets according to practice at various plants. The treatment followed at one plant for preserving the furnace bottom during long shutdown periods is to wash a slag heat over the bottom and after the furnace cools six or seven days to spray tar over the furnace.

In discussing the progress made recently in the manufacture of refractories for open-hearth use, one producer cited two forward steps, namely, the scientific sizing of particles and the shaping of brick in power presses. The result of this development gives the industry a brick low in porosity and the opportunity to lay up a roof true to dimensions. The speaker also mentioned that magnesite brick now are being used beneath the magnesite bottom in open-hearth furnaces. One operator mentioned that he is using pressed brick in the tap holes of his furnaces and that he finds them highly satisfactory.

Iron Content Varies

In discussing the adhesiveness for refractory properties of different kinds of chrome ore, one operator claimed that the iron content has an important bearing. At his plant where a chrome ore containing 36 per cent iron is used, higher adhesiveness is noticed than when his practice involves the use of a chrome ore containing a 22 per cent iron content.

Comparison of pouring practice with and without the Rowe-type basket, which involves a single brick hot top upon which is mounted a refractory basket, was made by an operator using this method at his pouring station. Compared with former practice he mentioned that by using the Rowe-type basket in pouring 7000 tons of forging steel, rejections decreased 67 per cent, chipping costs declined 48 per cent and the final yield increased 2.1 per cent. Based on 39 alloy heats and compared with former practice, the use of basket pouring reduced rejections 45 per cent, lowered chipping costs 63 per cent and increased the final yield 5 per cent.

In discussing the means followed in keeping furnaces in readiness for quick charging orders in the face of present intermittent steelworks operating schedules, one producer mentioned that his furnaces were maintained at 1200 degrees Fahr. over week-end shutdown periods on an oil consumption ranging from 600 to 800 gallons per 24 hours. Another operator cited a 9-day shutdown of a furnace during which time the furnace was kept warm on an oil consumption of 200 gallons a day, and with the checker temperature at 403 degrees at the time of shutdown.

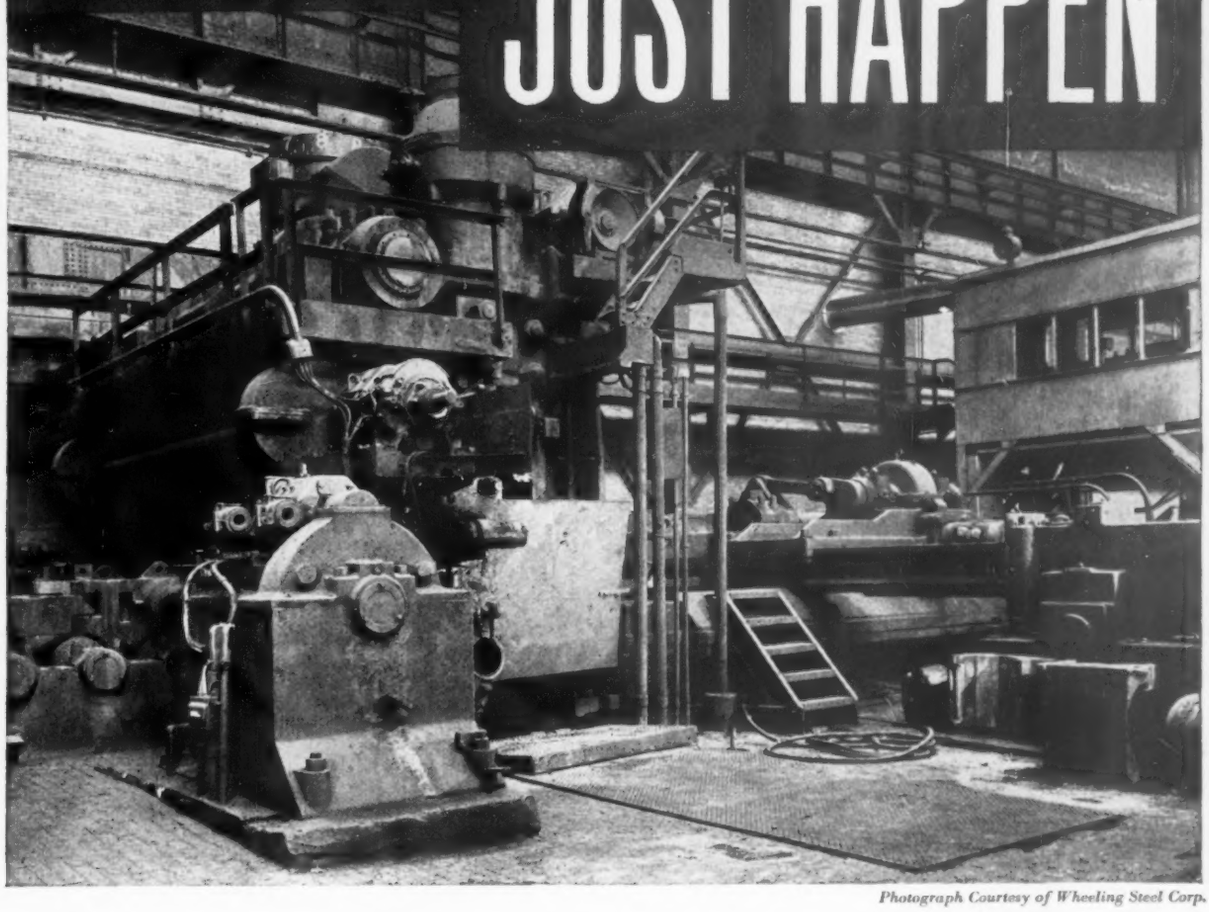
MILK TRUCK TANK LINED WITH CHROME-NICKEL STEEL: One of a fleet of 20 truck tanks operated by the Dairymen's League Co-operative Association Inc., New York, and constructed by the Heil Co., Milwaukee. The 1600-gallon tank is 163½ inches long, oval in shape, 55 by 65 inches. The inner lining is chrome-nickel steel of the 18-8 analysis, 10 gage; this steel also being used for the bands which hold the tank in the cradle. Exterior is of aluminum, with a 2-inch layer of cork insulation separating the two metals. The Dairymen's league also is specifying corrosion-resisting steel in considerable quantities for milk storage tanks, etc. (*See* STEEL, *Feb.* 15, *p.* 24)

Plan for International Foundry Congress

The Fourth International Foundry congress and exhibition will be held in Paris, France, Sept. 14-17, with the congress under the organization of the Association Technique de Fonderie de Paris. In addition to technical sessions and visits to the exhibition, numerous plant visitations are being arranged.

For the benefit of visitors numerous short tours will be conducted on the days preceding and following the congress and exhibition.

IT DIDN'T JUST HAPPEN



Photograph Courtesy of Wheeling Steel Corp.

Consider the modern rolling mill—it represents years of painstaking effort and evolution. Yet, most of us take it for granted. We think of it merely as a tool to work with, forgetting the years of development, study and effort needed to bring it to its present-day perfection.

The modern lubricants used in this unit parallel, in time, thought, and research consumed, the development of the rolling mill itself. Lubrication, even of such a seemingly simple unit, is really a complex problem. For example, a blooming mill roll neck is turning free one minute, under heavy pressure the next, subjected to sudden reversals, shocks, water, heat, and scale. The lubricant must meet all these varying conditions and do its work perfectly.

Lubricants, like mills, to be serviceable, must be backed by a company capable of continuously delivering high quality, uniform, and up-to-date products supplemented by engineering service. New developments, improvements and high efficiencies must be the constant aim.

Specializing in steel mill lubrication for nearly fifty years, the Pennsylvania Lubricating Company has a wealth of information, experience and equipment, which is always at your disposal. It will pay you to avail yourself of it.

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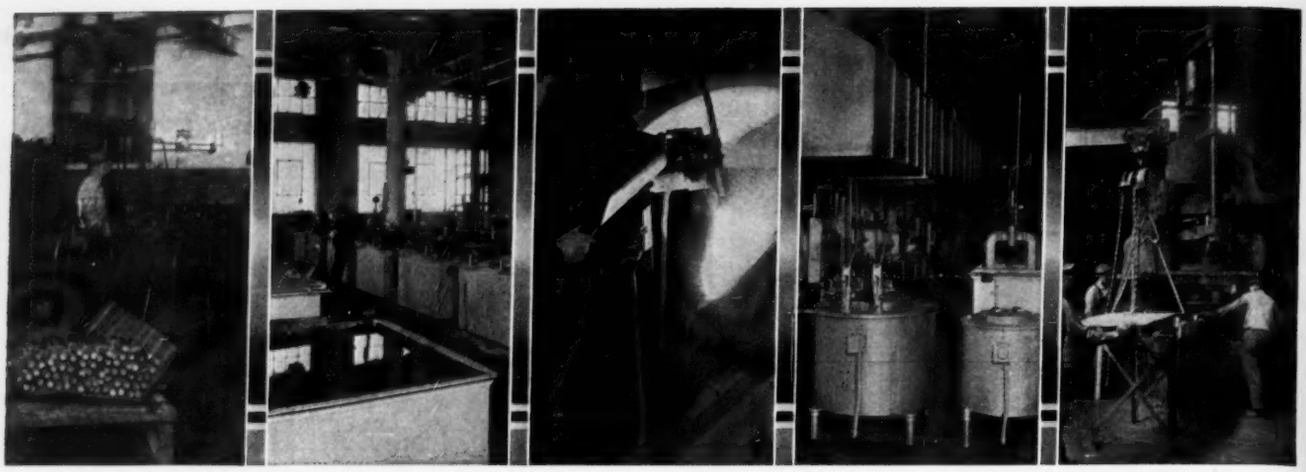
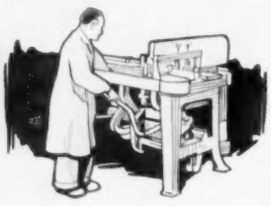
1885—*Lubrication in the Steel Industry*—1932

A subsidiary of the Standard Oil Company (N. J.)



MAKING THE MOST OF STEEL

A MANUFACTURER of pickling tanks claims advantages in the U-type or half-round bottom design of tanks in pickling a number of products, such as wire products in small coils. Several wire products makers have obtained more satisfactory results for certain purposes than with rectangular designs. The half-round bottom construction is said to reduce the quantity of acid required, and it also is claimed that it simplifies the flushing of the tanks to clean them of scale residue. The tanks also can be made of lighter material, this maker using 4, 6 and 8-inch material for its wood tanks, reinforced with monel metal or other corrosion-resistant rods, nuts and washers. Designs are adapted to specific requirements, using any length up to 40 feet, with widths and depths to meet individual needs. The half-round tank may be partially embedded in the concrete floors, or installed above floor levels in a set of shoes fitted to the tank's semi-circular base.



RAPID cutting of bar and tube stocks, high-speed steels, cobalt, tungsten and manganese steel is obtained with an abrasive cut-off machine in the plant of a western warehouse. Its successful operation is due chiefly to the rigidity of the machine. The machine is so substantially built, with a net weight of 1310 pounds, that the abrasive disk is in perfect alignment under all conditions, the material being held absolutely rigid. A 7½-horsepower motor is rigidly mounted on the base, and positive drive of the spindle is assured by six V-belts. An eccentric belt tightener eliminates moving the motor and maintains rigidity of the spindle, a slight turn of the spindle housing tightening the belt. The disk is positively guarded, and is of a special abrasive material 3/32-inch thick. The time required to cut stocks of all kinds is substantially less than that required by any method previously employed by that plant. Hardened tool steel drills broken in a jagged line can be cut off and put into condition to resharpen, eliminating long and tedious grinding jobs under former methods. Solid bars, 1 inch in diameter, are cut in 1 to 4 seconds and it is claimed that temper of material is not sacrificed. Tests in an acid bath show neither signs of cracking nor checking. It is stated that the cutter leaves a ground surface on the material so smooth that extra finishing seldom is necessary. All cuts made by the machine are said to be accurate and true.

$ $ $

Resistance welding machines may be made to serve as forging machines in shops where production and variety of work does not warrant standard forging machines. For example, collars may be upset on shafts or pins and even hot headed bolts may be made in this way. Some types of work can be heated most economically in this way.

$ $ $

A new hot galvanizing flux contains material to produce its own froth which is stable and effective. It serves as an effective wetting agent to the incoming work and minimizes fuming and spitting of the bath. Dissolved in water, the flux makes a suitable wash for pickled work which must have treatment before entering the zinc pot. The flux is suitable for all types of galvanizing work, including wire and wire products, with which difficulty is frequently encountered.

$ $ $

A producer of steel castings and forgings in central Pennsylvania has replaced the bolted flanges in the steam and hydraulic lines with solid welded joints, thus eliminating leakage and reducing the cost of maintaining the pipe lines.

$ $ $

On a recent order for hospital sinks and drain boards fabricated from 14-gage 18-8 corrosion-resisting steel and constructed as a complete unit, a manufacturer of this type of equipment rounded the corners and bottom to a 1½-inch radius. The completed job, welded and polished, gave the appearance of the usual pressed steel product and advantages of rigidity and sanitation were claimed. This is thought to be a new development.

BY INSTALLING two electric hardening furnaces equipped with automatic temperature and atmosphere control a manufacturer of high speed tools, such as cutters, reamers, broaches and special tools, increased production of the hardening room 20 to 50 per cent, maintains tolerance with tenths of thousandths continuously, eliminated tool losses due to faulty treatment, and maintains a more uniform hardness than with former methods of heat treating.

STRENGTHEN
THE WELDING "LINK" WITH MUREX CONTROL

You know the old adage about the chain. "No stronger than the weakest link". Frequently its true of the production chain, too. But if welding is a weak link in your production, then a remedy is Murex . . . and the new control which these heavy all-mineral coated electrodes make possible. ¶ Murex electrodes largely eliminate "old human element" . . . and that means the old variables. It's the action of the Murex mineral coating under the arc which makes the difference, and the electrode-for-electrode uniformity of that action which exacting care in manufacture assures. ¶ That action is quiet, almost noiseless, with metal losses through spattering and vaporization negligible, and without objectionable welding fumes or smoke. The operator bends the electrode, which does not injure the coating, and holds a short arc by "riding" it on the work. And the result of this Murex controlled action is invariably an even, maximum deposit of strong, ductile metal in a clean, round fillet or a smooth, flat bead, free from under-cutting. ¶ Murex electrodes are made 18 inches long in a number of types . . . for welding commercial mild steel, 18-8 stainless, manganese steel, and other materials. Let us send complete information about the use of Murex in your welding . . . Write.

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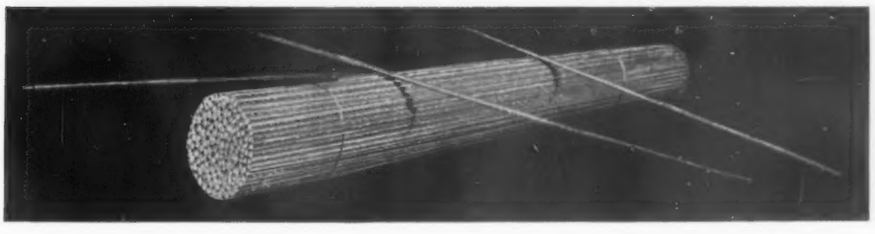
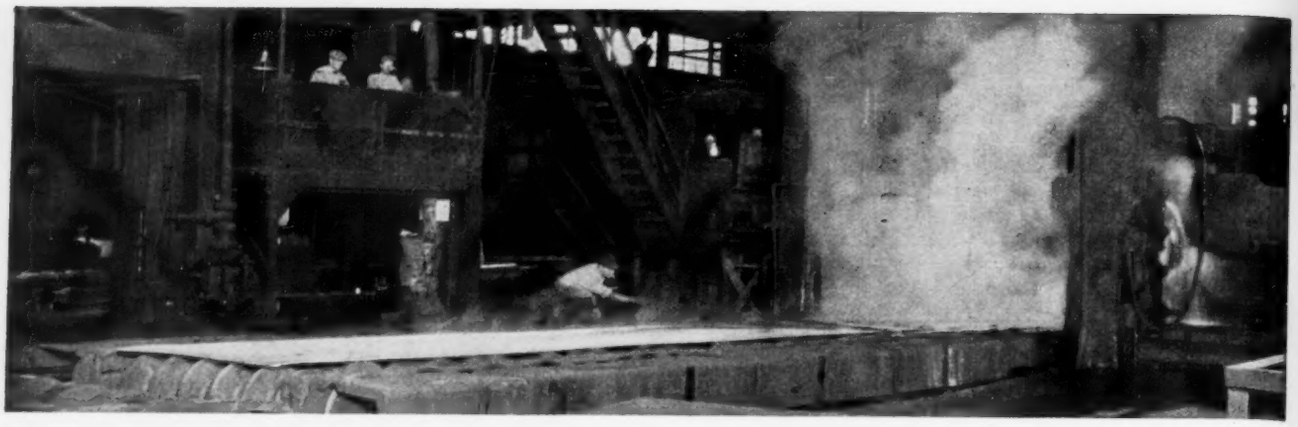


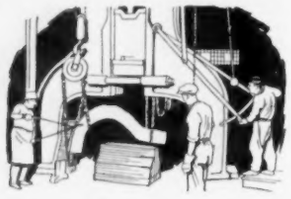
MUREX HEAVY MINERAL COATED ELECTRODES

Murex Electrodes are made in the United States by the American Murex Corp. and are sold only by the Metal & Thermit Corp., pioneers of welding and manufacturers of Thermit. Literature on Thermit welding sent on request.



PROGRESS IN STEELMAKING

SUCCESSFUL operation of anti-friction roll neck bearings under severe overload conditions has been achieved by the development of a grease having lead oleate incorporated in intimate combination. The new lubricant provides a load carrying capacity of 25,000 pounds a square inch and operates satisfactorily through a temperature range of 0 to 150 degrees Fahr.



STEELS with high silica content are red-short in forging, whereas those containing ferrous silicates with a high ferric oxide content forge without cracking, according to test data compiled by the bureau of mines experiment station, Pittsburgh.

♦ ♦ ♦

Maintaining dross loss in wire galvanizing practice under 1½ per cent is accomplished by employing deep instead of shallow kettles and progressive heating, according to tests conducted by a galvanizing authority. The major portion of the heat is applied to the top section of the pot, less in the middle and still less or none at the bottom.

♦ ♦ ♦

Graphite mold wash is best prepared by mixing the dry powdered material with water to a paste consistency. By this arrangement lumps in the mixture are avoided and the paste can be diluted to the proper consistency for spraying the mold. The wash will not adhere uniformly if too thin. According to a graphite producer, three parts water to one part graphite makes a satisfactory mixture which deposits uniformly on the interior surface when the temperature of the mold to be coated ranges from 120 to 180 degrees Fahr.

♦ ♦ ♦

Pyrophosphoric acid is the basis of a new cleaner for producing brightened surfaces on high-grade and rustless sheets. The acid removes the films of oxide without attacking the metal. Best results are obtained by treating the metal at a temperature ranging from 320 to 482 degrees Fahr.

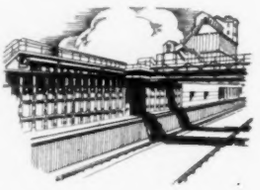
♦ ♦ ♦

Tests made by the bureau of mines experiment station, Pittsburgh, show that the deader high-carbon axle steels are killed and the denser, the higher the chipping cost for a given heating temperature. The tests disclose that if the heating temperature of denser steels is increased, chipping costs are reduced materially.

INCREASED strength of contact zone between the weld and high-manganese steel plates used for blast furnace skips, chute linings, sintering plant elevator buckets and other wear-resisting parts, is claimed for a newly developed welding rod containing from 12 to 15 per cent manganese and 5 per cent nickel.

♦ ♦ ♦

Accurate production records have been secured by the use of a counting device to measure the quantity of coal fed through automatic stokers to boilers and reheating furnaces. The counters record each revolution of the stoker and since the weight of a hopper of coal is known, the total consumption in pounds readily is calculated. A time record indicates the elapsed time between strokes, and the idle time of the stoker. A saving of $400 was effected by one company by the installation of counters compared to the cost of other devices affording the same information.

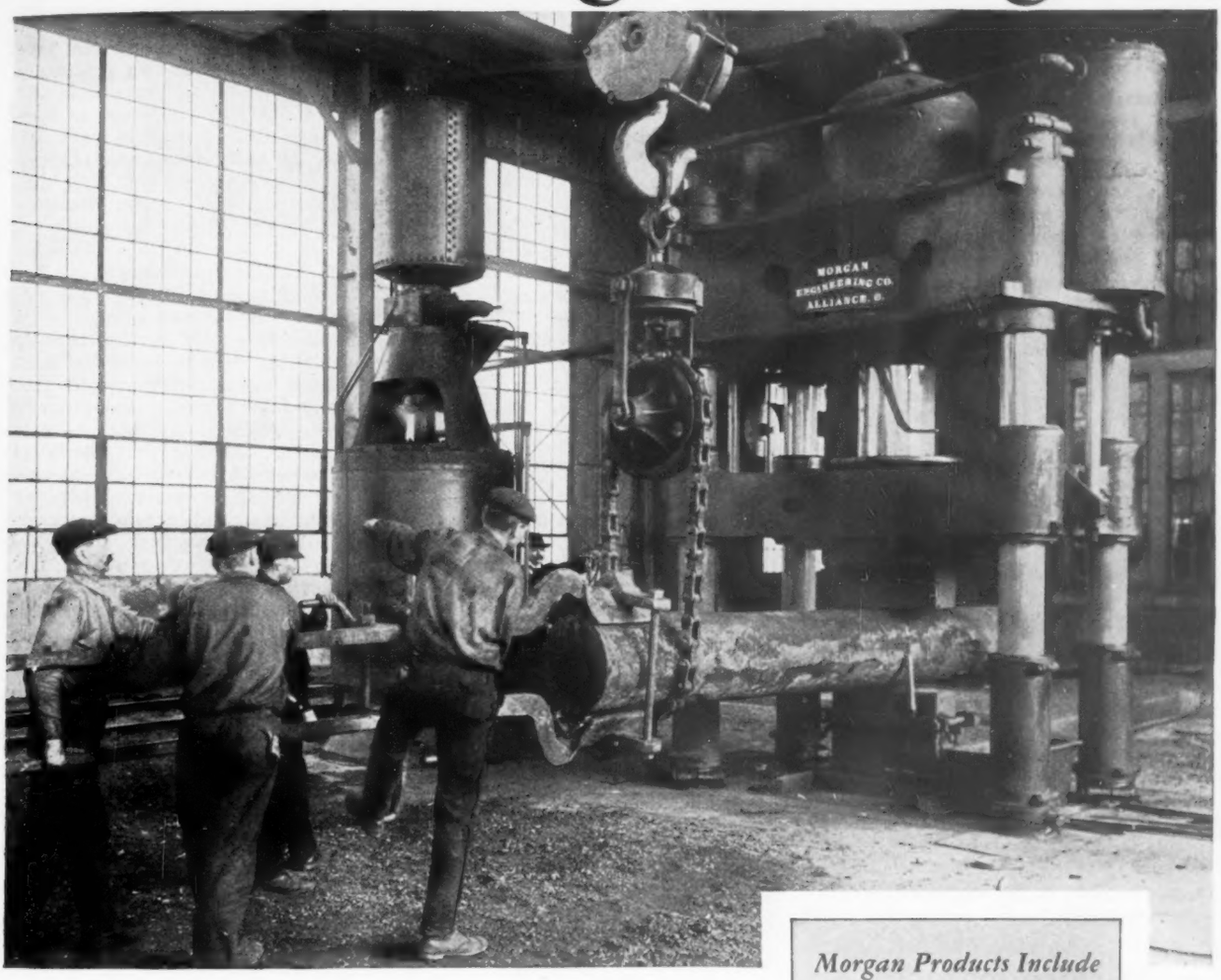


RECOVERING phenol from by-product coke plant liquors at large saving in power and extraction costs is being accomplished in Germany by the use of tricresylphosphate. The method is supposed to be superior to the benzol process inasmuch as the phosphate has 16 to 30 times higher absorption power for phenol than benzol. From four to five parts of the phosphate are required for an extraction of 100 parts water with 3 grains of phenol per liter. The phosphate becomes laden with tar globules after a period of usage and is regenerated by vacuum distillation.

♦ ♦ ♦

Thyratron tubes now are used to control the speed of motors driving the reels on wire drawing benches. A floating roll in contact with the wire being drawn controls the position of the core in a reactor which is connected in the grid circuit of thyratron. A similar setup is employed to control the speed of strip steel in transit through continuous pickling machines.

BUILT BY MORGAN *Engineering* » »



ORIGINALLY known in the American Ruhr as The Hammer Shop, The Morgan Engineering Company pioneered the building of steam hammers for the forging industry in 1868. Keeping pace with the industry's requirements, Morgan in later years has built many high speed steam Hydraulic Forging Presses for producing heavy forgings. An 800-ton press is shown here, having a maximum stroke of 40″, working stroke of 5″. Single frame types are built from 150 to 500 tons capacity; four column types up to 6000 tons capacity. Forging Hammers are built in 150 to 40000 pounds capacity; Drop Hammers are built in 1000 to 16000 pounds capacity.

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BLOOMING MILLS
PLATE MILLS
CONTINUOUS MILLS
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THE MORGAN ENGINEERING COMPANY

New York, 25 Broadway **ALLIANCE, OHIO** *Pittsburgh, 1420 Oliver Bldg.*

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Nickel-Clad Steel Plate

Production for equipment is improved, by Erle G. Hill, in Chemical & Metallurgical Engineering, May 1932, *p.* 268, 1 *pp.*, 1 *illust.*

Since the introduction of nickel-clad metal, the interest aroused and excellent results obtained by fabricators have created a demand for plates of this material in a wide range of sizes and gage. Production has now been so improved that plates can be furnished varying from 12-gage to extra heavy weights. Plates as large as 330 x 96 inches are now being made and manufacture of larger ones is contemplated.

In recent months a new nickel-clad steel has been evolved whose face is free from oxide, with a bright finish and surface superior to that produced by standard plate-mill practice. Nickel-clad plates are made of mild steel and malleable nickel, with the steel usually comprising about 90 per cent of the thickness. The nature of the bond between the steel and nickel enables the fabricator to employ the methods usually followed in fabricating equipment from steel plates.

In hot working nickel-clad steel the serious nature of the effect of sulphur on nickel should be remembered—the nickel being attacked along grain boundaries and losing ductility. This was one of the difficulties which had to be overcome in the manufacture of large-size plates.

—STEEL, 6-6-32

Chrome-Plated Tools

Chromium plating cutting tools multiplies wear-life and saves man-hours, by Joseph Geschelin, in Automotive Industries, May 21, 1932, *p* 748, 4 *pp.*, 3 *illusts.*, 1 *table.*

One industrial equipment manufacturer reports an increase in life of 22 times for chromium plated drills, while the life span of reamers is said to have increased about 25 times by chromium plating in another plant. A drawback to this development has been lack of suitable plating facilities, but this problem is being overcome.

Advantages of chromium plate on cutting tools include extreme hardness, resistance to wetting, low coefficient of friction and resistance to tarnish. Moreover since some tools may be replated indefinitely their salvage value becomes high. Successful applications of these plated tools have been in the cutting of nonmetallic materials, nonferrous metals and cast iron. A number of types of tools have been chromium plated with success, including reamers, burnishers, broaches, arbors, plugs and ring gages, bushings, drawing dies, lathe centers, tool tips, twist drills, slitting saws, files, thread chasers and porcelain dies.

—STEEL, 6-6-32

Lighting Spray Booths

Effective lighting installation requirements, by S. E. Strunk, in Electrical Production, May 1932, *p.* 4, 1 *pp.*, 1 *illust.*

Lighting of spray booths is an interesting and difficult problem because of the varying requirements. The proper solution must combine a high level of illumination and correct distribution with the mechanical requirements of safety and maintenance. For lighting small spray booths, 3 to 6 feet in width, two reflectors with 300-watt lamps usually are adequate; they should be located just outside the booth near the upper edge and placed on each side of the booth so as to direct the light toward the center of the booth. Thus any reflected glare is away from the operators' eyes.

Large spray booths usually can be lighted by means of two rows of reflecting equipment. With units from 5 to 6 feet apart in a row the equipment should be mounted about 7 feet above the floor and directed so that light comes down at an angle sufficient to shield the direct rays from the operator working on the other side. Vaporproof and dust-tight lighting equipment is recommended.

—STEEL, 6-6-32

Alloy Steels

Recent trends in alloy steels, by Richard Tull, in Heat Treating and Forging, May 1932, *p.* 309, 2 *pp.*, 3 *illusts.*

Despite the decreased demand for iron and steel products, the past year has seen many remarkable developments in the field of alloy steels. Improved physical properties resulting from the proper use of ferroalloys in the manufacture of iron and steel have attracted wide interest in practically every other industry. Competition and the necessity for rigid economy have resulted in close scrutiny of materials, and consequently such characteristics of steel as great strength and ductility, resistance to abrasion, corrosion and oxidation, as well as shock, impact and fatigue resistance have received careful consideration.

Probably never before has the subject of corrosion been of such vital interest. The rapid strides recently made in the field of corrosion-resistant steels has indicated clearly that in many cases corrosion losses can be reduced greatly, if not entirely eliminated. Low-chromium steels (4 to 6 per cent chromium), 18-8 chrome-nickel steels, chrome-vanadium nitriding steels and chromium-manganese silicon (cromansil) steels are among the new or comparatively new engineering steels which are finding ever-widening applications in modern industry.

—STEEL, 6-6-32

Stampings

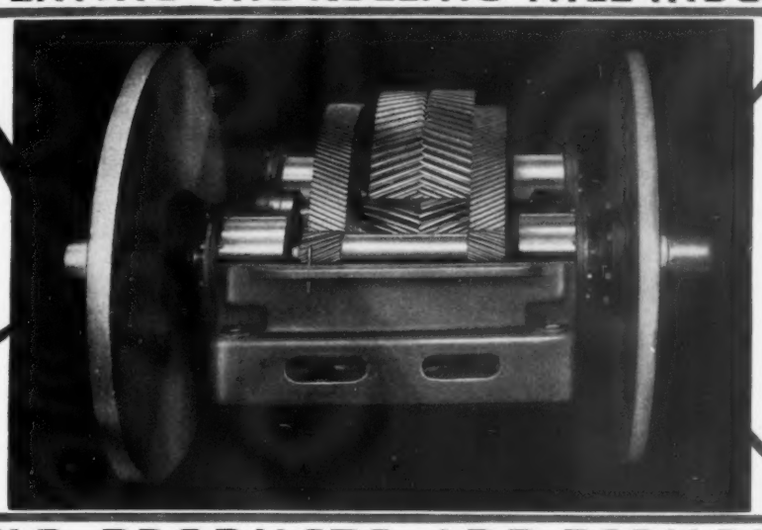
Economies in stampings, by J. K. Olsen, in Product Engineering, June 1932, *p.* 250, 3 *pp.*, 5 *illusts.*

In modern metal stamping practice, the cost of raw material is by far the greatest expense item. Hence, any efforts made to obtain the best and most economical usage of material are of prime importance. Where quantities are large and it is possible by the design of the part to conserve material through better layout in the strip, any consequent increase in die cost will be absorbed quickly.

The first consideration in designing a stamping is the thickness of the stock. What the depth and shape of the bead should be is a common problem, as well as the economic limit to which thickness reduction can be carried. Minimum economic thickness, as a practical guide, can be considered at 0.020-inch. Another important consideration in designing stampings is the layout of the blanks in the strip. This varied and complicated problem should be considered carefully as both the service and cost of the product are affected by the material layout.

—STEEL, 6-6-32

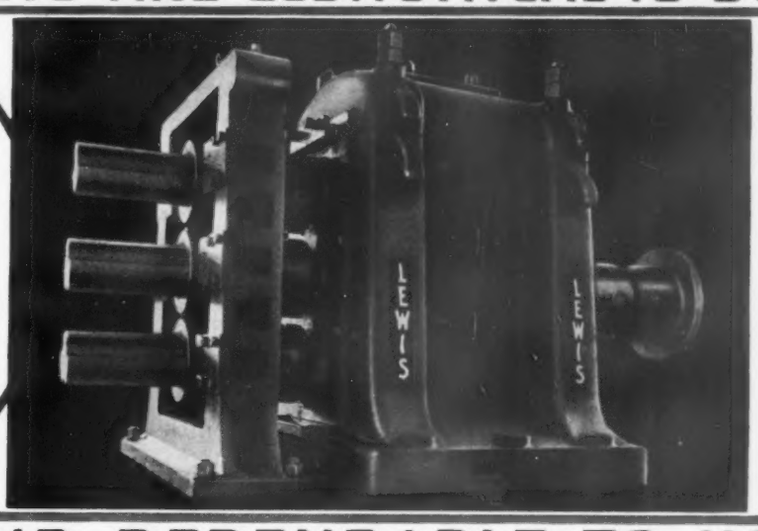
SERVING THE ROLLING MILL INDUSTRY SINCE 1856



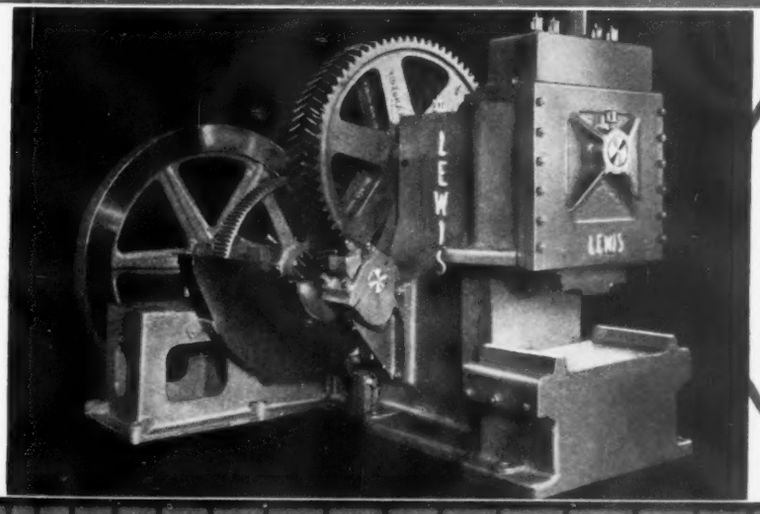
Balanced roller bearing equipped double reduction gear drive with very accurately generated teeth up to and including 6000 H. P.

LEWIS PRODUCTS ARE ECONOMICAL TO BUY

28" Three-High Enclosed Type Pinion Stand with universal couplings, combination spindle carrier and thrust bearing stand to take thrust from the mill.



EFFICIENT AND DEPENDABLE TO USE



150-lb. Rail Breaker for Scrap Yards and Rail Rerolling Mills. This machine makes a clean, straight break which is very desirable when entering a slitting mill.

LEWIS FOUNDRY & MACHINE CO.

LEWIS

P. O. BOX 1591
PITTSBURGH, PA.

New Equipment

PRODUCTION FABRICATION TREATMENT FINISHING

Small Magnetic Clutch Requires No Brushes

Magnetic Mfg. Co., Milwaukee, recently introduced a small size multiple disk magnetic clutch which is only 4½ inches in diameter. The design is unique in that it requires

Multiple disk magnetic clutch developed by Magnetic Mfg. Co.

no brushes, brush holders or collector rings. Torque capacity of the unit, shown in the illustration herewith, is 600 inch pounds and 30 watts, direct current, are required for operation. The magnet is stationary and the new clutch is designed for use as a built-in machine tool drive.

◆

New Riveter Has Unique Feeding Device

Norin Engineering Co., 355 Union Park court, Chicago, is offering a mechanical riveter with a unique feeding device. The rivets are fed from a hopper through a chute to a stake inserted in the riveter frame. On the stake the rivets are moved step by step until inserted into a pair of holding fingers directly under the riveting dies. The rivet shank sticks above the fingers and locates the work that is to be riveted.

Shown in the accompanying illustration, the new unit is capable of driving 5/32-inch diameter iron rivets. Power is exerted through toggle and lever action so arranged as to create a long uniform pressure zone which automatically takes care of various riveting grips. Tonnage may be adjusted by a screw at the rear of the mechanism to accommodate different riveting jobs. A ¼-horsepower electric motor drives the riveting mechanism as well as the automatic feeding arrangement of the new machine.

◆

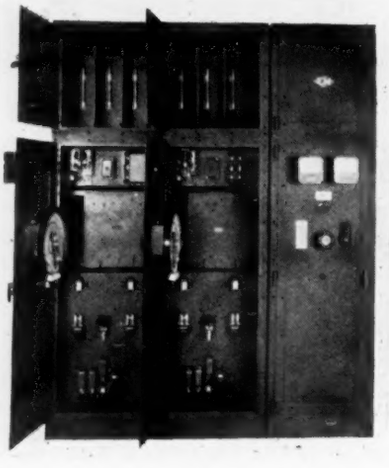
Rubber Welding Hose Is Heat Resisting

B. F. Goodrich Rubber Co., Akron, O., has developed a heat resisting welding hose constructed of specially compounded rubber. Inner plies are fabric wrapped and the outside ply consists of braided asbestos yarn. The rubber cover is 3/32-inch thick. The new hose is carried in stock in ¼, 5/16, and ⅜-inch sizes, in 50-foot lengths and in both red and green colors.

◆

Develops Cubicle Starter For Motors

Electric Machinery Mfg. Co., Minneapolis, has developed a cubicle starter for synchronous motors. Shown in the accompanying illustration, it has a front compartment for the meters, control relays, rheostat and field contactor; a rear compartment for oil break line switches; and upper compartment



Cubicle motor starter designed by Electric Machinery Mfg. Co.

Mechanical riveter introduced by Norin Engineering Co.

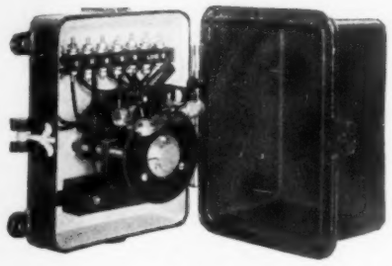
for disconnects. The starter is designed to permit easy access to all working parts.

◆

Relay Selects One of Three Control Circuits

Automatic Temperature Control Co. Inc., Philadelphia, has brought out a relay designed primarily to select one of three control circuits when actuated by an instrument having sustained contacts for low and high positions only, with an intermediate no-contact position The unit, shown in the accompanying illustration, has motor-operated mercury contact tubes and is mounted in a cast aluminum case with hinged cover.

By means of the relay, it is possible to use an instrument with a single sustained contact such as a thermometer, pressure gage, etc., for operating two separate control circuits as required to function a two-position motor operated valve, thus eliminating the customary low position contact so that there is no in-



Relay brought out by Automatic Temperature Control Co. Inc.

terference with free movement of the instrument stylus and its true reading when conditions are such that the stylus is below the control setting.

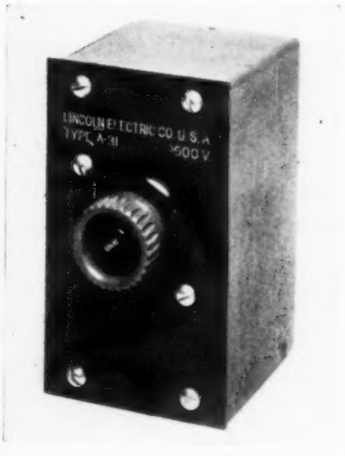
The relay is designed to provide selective, positive contacts for the operation of motor-operated controlers, signal lights, the interlocking of electrical circuits, etc., when actuated by a pyrometer, thermometer, pressure gage or other contact instrument.

◆

Safety Is Feature of New Push Button

Lincoln Electric Co., Cleveland, has announced a number of improvements in its safety push button introduced to the trade early last year. A feature is that start button is inside of the stop button as shown in the accompanying illustration. The stop button can be operated from any angle by merely striking the front of the control box with the flat of the hand, but the start button must be operated with the finger.

With the new push button, the stop button can be locked in the off position by pushing it in and twisting it to the right. Heavy springs prevent accidental operation of either button when locked.

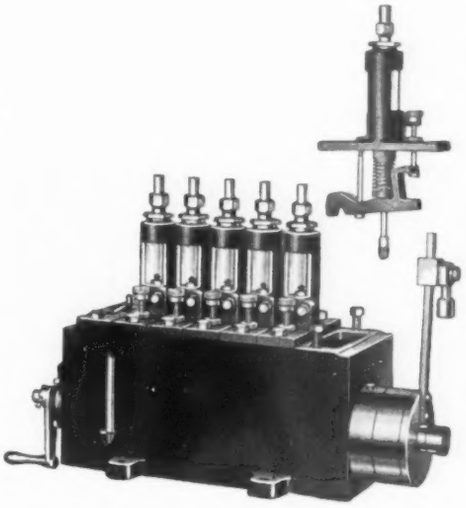


Safety push button improved by Lincoln Electric Co.

◆

Lubricator Embodies Simple Refilling Method

S. F. Bowser & Co. Inc., Fort Wayne, Ind., recently announced a new force-feed lubricator, designated figure 451. The unit, shown in the accompanying illustration is equipped with liquid-filled sight glasses. A single plunger serves the dual purpose of drawing the oil from the reservoir and forcing it in a straight vertical path through the sight glass to the point of lubrication at the end of the feed line.



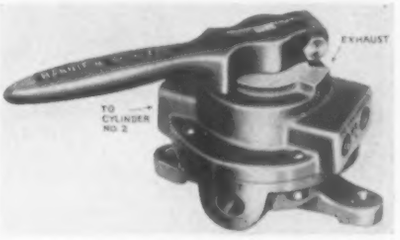
Bowser force-feed lubricator has liquid-filled sight glasses

Each pumping unit is individually adjusted and removable while the lubricator is in operation. A simple method of refilling the sight glasses has been incorporated; a standard lubrication fitting permits injection of the liquid by means of a grease gun. The new unit can be furnished with any type of driving mechanism required.

◆

Control Valve Employs Two Air Cylinders

Hannifin Mfg. Co., 621 South Kolmar avenue, Chicago, recently announced a duplex air control valve designed for use on machines which employ two air cylinders operating in progressive sequence. The unit, shown herewith, has four independent outlet ports for control of two double-acting cylinders. It is so designed that two cylinders can be operated in either direction and in any sequence desired.



Duplex air control valve announced by Hannifin Mfg. Co.

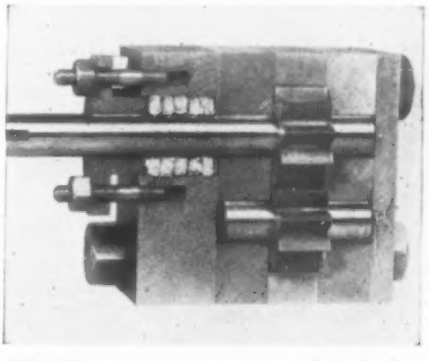
The duplex valve embodies all the features of the standard packless valves manufactured by the company and is furnished in two sizes, model D-37, with ⅜-inch I. P. connections, and model D-75 with ¾-inch I. P. connections.

◆

Designs Larger Series of Nitralloy Pumps

Northern Pump Co., Minneapolis has developed a new and larger series of nitralloy steel pumps having capacities from 14 to 42 gallons per minute at 1200 revolutions per minute. The new XE series supplements the XA series and gives a complete line of units with capacities from ¼ to 42 gallons per minute.

The extreme hardness of nitralloy steel (1000 brinell) makes these pumps suitable for all types of oil service, including the handling of dirty crude oils and distillates at high pressures. For nonlubricating oils the pumps are equipped with nitralloy plate bearings such as shown in the accompanying illustration. Roller bearing pumps handling clean lubricating oil are good for pressures up to 1600 pounds on continuous service.



Nitralloy steel pump marketed by Northern Pump Co.

AMERICAN

STEEL SHEETS for EVERY PURPOSE

Black and Galvanized Sheets

Formed Roofing and Siding Products

Tin and Terne Plates

ESTABLISHED standards of *quality* with reliability in service are important factors to all buyers and users of sheet metal. AMERICAN products have demonstrated their adaptability to all industrial and construction uses.

The wide utilization of steel sheets and plates is evidence of the tremendous progress made in their manufacture. Specify KEYSTONE Copper Steel for maximum *resistance to rust* — a fact fully proved by time and weather.

Write for full information on U S S STAINLESS and Heat Resisting Steel Sheets and Light Plates — for every requirement to which these alloys are found adapted.

American Sheet and Tin Plate Company

GENERAL OFFICES: Frick Building, PITTSBURGH, PA.

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

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American Steel & Wire Company
Carnegie Steel Company
Columbia Steel Company
Cyclone Fence Company
Federal Shipb'ldg. & Dry Dock Co.
Illinois Steel Company
Minnesota Steel Company
National Tube Company
Oil Well Supply Company
The Lorain Steel Company
Tennessee Coal, Iron & R.R. Company
Universal Atlas Cement Company

Pacific Coast Distributors—Columbia Steel Company, San Francisco, Calif.
Export Distributors—United States Steel Products Company, New York, N. Y.

Steel Rate Off; Shape Buying Heavy

Ingot Rate Year's Lowest, May Pig Iron Output at New Bottom, But Constructive Factors Are Numerous—New Strip and Cold-Finished Pricing

STEELMAKING operations in the week ended June 4 declined two points to 21 per cent, lowest rate this year, and since a further reduction to no higher than 20 per cent is indicated for this week the causes lie deeper than the Memorial day holiday.

Only structural steel makes a good showing, but a lag peculiar to building prevents current awards bolstering current production. The automobile industry is in the anomolous position of expanding assemblies while curtailing steel buying because Ford, mainstay of the industry, supplies half of its own steel needs and is taking much of this from its stockpile.

Miscellaneous demand has fallen off sharply, leading producers to believe that steel is exceedingly sensitive to general conditions. June and early July is now appraised as the low point, and it is believed that passage of the revenue bill, balancing the budget and adjustment of national and international political problems will shortly inspire confidence. One steelmaker is specifying vacations be concluded by Aug. 1.

Pig iron production descended to a historical low in May when a net loss of five brought the active list of blast furnaces May 31 to 54 out of 297 and the daily rate to 25,282 gross tons, 3242 tons or 11.4 per cent under April. Not since pig iron statistics began to be compiled in 1903 has the daily rate been so low; on the basis of estimates for previous years May appears the leanest month since midsummer of 1897. The total May output of 783,769 tons gives 1932 a 5-month total of 4,921,619 tons, against 9,460,124 tons a year ago.

It is not a happy coincidence for producers that promulgation of third quarter prices falls at a time when output is easing. There is, however, unusual determination to hold present steel levels, which contrasts with further weakness in beehive coke, scrap and some pig irons.

Quotations on wire and nails, cold-rolled strip, common grades of sheets, and bolts, nuts, and rivets have been extended. At least one maker is reaffirming plates, shapes and bars. New extras and a single price basis for hot-rolled strip are for most users a slight adjustment downward.

Cold-finished bar interests have set up new bases at Cleveland, Detroit, Chicago, Buffalo, and eastern Michigan, the net effect being an advance. Rail steel bars are easier. Basic iron is off 50 cents in eastern Pennsylvania. The net result of these price movements is to take 1 cent off the iron and steel composite of STEEL, now $29.56; maintain the finished steel composite at $47.62; drop the scrap composite 13 cents to $6.75. Last year's prices on iron ore have been definitely reaffirmed.

Structural steel awards last week were put up to 30,843 tons, second only to the 31,886 tons of the week preceding, largely by the placing of 15,900 tons for postoffice construction in Washington. Concrete bar orders also reached a high level, at 6211 tons. On the Pacific coast, bar lettings thus far in 1932—now 26,533 tons—exceed the comparable period of 1931.

Youngstown Sheet & Tube Co. has booked about 10,000 tons of 8-inch steel pipe for the Standard Oil Co. of Kansas. St. Paul has let 1200 tons of cast pipe to the United States Pipe & Foundry Co. Dominion Steel & Coal Co., Sydney, N. S., will roll 15,000 tons of rails for the Canadian National. May freight car awards, at 60, give 1932 a total of 359, compared with 4134 a year ago. Tin plate mills at Pittsburgh have expanded to 50 per cent.

Pursuing its policy of fighting dumping of foreign steel, the American Iron and Steel institute has filed dumping complaints on angles, bars, beams, billets, blooms, channels, joists, plates, rods, sheet, shapes and wire nails and netting from Belgium, France, Germany and Luxemburg.

Composite Market Averages

	June 4	May 28	One Month Ago May, 1932	Three Month Ago March, 1932	One Year Ago June, 1931	Ten Years Ago June, 1922
Iron and Steel Composite	$29.56	$29.57	$29.62	$29.61	$31.02	$36.96
Finished Steel Composite	47.62	47.62	47.62	47.09	48.60	53.29
Steelworks Scrap Composite	6.75	6.88	7.03	7.94	8.84	14.60

Iron and Steel Composite:—Pig iron billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	June 4, 1932	May 1932	March 1932	June 1931
PIG IRON				
Bessemer, del., Pittsburgh	$16.13	16.13	16.76	18.26
Basic, valley	15.00	15.00	15.00	17.00
Basic, eastern del., eastern Pa.	14.50	15.00	15.75	17.00
No. 2 foundry, del. Pittsburgh	16.26	16.16	16.51	18.26
No. 2 foundry, Chicago	16.00	15.60	16.50	17.50
*Southern No. 2, Birmingham	11.00	11.00	11.00	12.00
**No. 2X, Virginia furnace	18.00	18.00	18.00	18.25
**No. 2X, Eastern del. Phila.	14.76	15.13	15.76	17.76
Malleable, valley	14.50	15.00	15.50	17.00
Malleable, Chicago	16.00	15.60	16.50	17.50
Lake Superior, charcoal, del. Chi.	23.04	23.04	23.04	27.04
Gray forge, del. Pittsburgh	15.63	15.63	16.13	17.63
Ferromanganese, del. Pittsburgh	80.24	80.24	80.24	89.79

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

COKE				
Connellsville, furnace, ovens	2.00	2.15	2.25	2.40
Connellsville foundry, ovens	3.00	3.15	3.25	3.25
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	29.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	29.00
Billets, open-hearth, Pittsburgh	26.00	27.00	27.00	29.00
Wire rods, Pittsburgh	37.00	37.00	37.00	35.00

	June 4, 1932	May 1932	March 1932	June 1931
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.60	1.55	1.65
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.91	1.91	1.81	1.94
Iron bars, Chicago	1.65	1.65	1.70	1.70
Shapes, Pittsburgh	1.60	1.60	1.55	1.65
Shapes, Philadelphia	1.75	1.75	1.66	1.76
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.60	1.60	1.55	1.65
Tank plates, Philadelphia	1.79½	1.79½	1.69½	1.85½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.70	1.70	1.70	1.85
†Sheets, No. 24, hot, ann., Pitts.	2.20	2.20	2.20	2.15
Sheets, No. 24, galvan., Pitts.	2.85	2.85	2.80	2.80
Sheets, No. 10 blue anneal., Chi.	1.85	1.85	1.85	2.00
†Sheets, No. 24, hot ann., Chi.	2.35	2.35	2.35	2.40
Sheets, No. 24 galvan., Chi.	3.00	3.00	3.00	2.95
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Wire nails, Pittsburgh	1.95	1.95	1.95	1.80
Tin plate, per base box, Pitts.	4.75	4.75	4.75	5.00

†Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heavy melting steel, Pitts.	$9.25	9.75	10.25	10.30
Heavy melting steel, eastern Pa.	6.25	6.25	7.35	8.75
Heavy melting steel, Chicago	6.00	6.20	6.75	8.50
No. 1 wrought, eastern Pa.	7.75	7.75	9.00	10.50
No. 1 wrought, Chicago	5.25	5.25	6.25	8.25
Rails for rolling, Chicago	8.00	8.25	9.50	10.90

Sheets

Makers Reaffirming Prices for Third Quarter on Ordinary Grades—Market Is Quieter

SHEET PRICES, PAGE 45

Pittsburgh—Despite proximity of the third quarter, leading sheet producers have not formally announced prices for that period. Specifications in the past week were in keeping with the average mill output of 22 to 23 per cent. Apparently little automobile tonnage has come to this district from a purchase by a leading automobile maker late last week. Automobile sheet prices still are irregular. Black sheets hold at 2.20c; blue annealed, 1.70c; galvanized, 2.85c; and cold-rolled, 2.25c and 2.75c, according to gage.

Philadelphia—Some mills have indicated their intention of reaffirming current prices for third quarter on No. 10 hot-rolled, No. 10 blue annealed, No. 24 hot-rolled annealed, and No. 24 galvanized. Certain grades of full finished sheets may be advanced. The market is dull.

Buffalo—District sheet mills have slackened schedules after filling some rush orders for automotive material. The operating rate is now 25 to 30 per cent.

Cleveland—Some makers have reaffirmed the current price of 2.20c, base, Pittsburgh, on black sheets, and 2.85c for galvanized, for third quarter. So far this is the only official action on various grades, although further price announcements for that period are expected to follow immediately. No important inquiries for the next quarter are pending. Consumers have held purchases close to spot requirements and there will be comparatively little carryover. The Fisher Body Co.'s plant here has slowed up on operations; sheet demand from the refrigerator manufacturers is intermittent, but volume is fairly steady; furniture manufacturers and local barrelmakers are taking little material.

Cincinnati—A belated seasonal increase in demand for galvanized sheets is noted here. Automotive buying is limited chiefly to demands represented by small cars.

Chicago—Sheet business was lighter during the past week, partly as a result of the holiday influence, while operations also were somewhat lower. Requirements of all leading consumers are on the basis of occasional small lots, with no improvement noted over the quietness of recent weeks. Prices are fairly steady on small lots, with third quarter quotations yet to be announced.

New York—On a relatively small tonnage of galvanized sheets for third quarter, producers here generally are quoting the unchanged prices of 2.85c, Pittsburgh. Prices also are being reaffirmed on other ordinary commercial grades of sheets by some makers, where specific inquiries appear.

Youngstown, O.—Sheetmakers in this district continue to receive sufficient specifications from automotive interests to keep some mills occupied, but others are idle. Irregularity of mill operations in this district apparently reflects similar uncertainty in the automobile industry, though this does not apply to makers of Ford parts.

Generally, sheet quotations appear unchanged, although rumors have been heard of slight concessions having been offered to one important automotive consumer on a so-called "special" autobody sheet.

St. Louis—Sheet producers and distributors here report May business was in slightly larger volume than that of April. Demand generally, however, continues light. A hopeful feature is the firmness of prices.

Birmingham, Ala.—Sheet production is lower now than for some time. Not much business has been booked for third quarter.

Current Finished Steel Prices

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Steel Sheets

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.55c
Gary, Ind. Harbor, base	1.65c
Chicago, del.	1.70c
New York, del.	1.90c
Birmingham, base	1.70c
Philadelphia, del.	1.86c

BLUE ANNEALED NO. 9-10

Pittsburgh, base	1.70c
Chicago, district mills	1.80c
Chicago, delivered	1.85c
Philadelphia, del.	2.01c
New York, del.	2.05c
St. Louis, delivered	2.07½c
Birmingham	1.85c
San Francisco c.i.f.	2.30c

HOT ROLLED ANNEALED NO. 24

Pittsburgh, base	2.20c
Gary, Ind. Harbor, base	2.30c
Chicago, del.	2.35c
New York, del.	2.55c
Philadelphia, del.	2.51c
Birmingham, base	2.35c
St. Louis, del.	2.57½c
San Francisco, c.i.f.	2.80c

GALVANIZED NO. 24

Pittsburgh, base	2.85c
Gary, Ind. Harbor, base	2.95c
Chicago, del.	3.00c
Philadelphia, del.	3.16c
Birmingham, base	3.00c
St. Louis, del.	3.22½c
San Francisco, c.i.f.	3.45c

AUTOMOBILE NO. 20

Pittsburgh, base	2.80c to 2.90c

FURNITURE

Pitts., No. 10 heavy	2.65c
Pitts., No. 20 light	3.15c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.40c to 2.50c
Gary, base	2.50c to 2.60c
St. Louis, del.	2.77½c to 2.82½c

HEAVY COLD ROLLED NO. 10

Pittsburgh, base	2.25c
Gary, Ind. Harbor, base	2.35c
Chicago, del.	2.40c
Philadelphia, del.	2.56c
New York, del.	2.60c
St. Louis, del.	2.62½c

COLD ROLLED NO. 20

Pittsburgh, base	2.75c
Gary, Ind. Harbor, base	2.85c
Chicago, del.	2.90c
Philadelphia, del.	3.06c
New York, del.	3.10c
St. Louis, del.	3.12½c

TIN AND TERNE PLATE
Per 100-pound box, Pittsburgh

Tin plate, coke base	$4.75
Long ternes, 24, unassort.	3.00c

Gary, Ind., base 10 cents higher

Wire Products

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)
F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95
(Per pound)	
Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing, (9-11 ga.)	$55.00
(12½ ga. and lighter)	$60.00
(To Manufacturing Trade)	
Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Chicago and Anderson, Ind., $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.60c
Philadelphia, del.	1.79½c
New York, delivered	1.90c
Boston, delivered	2.02c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Birmingham, Ala., base	1.75c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	1.90c
St. Louis, del.	1.97½c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, del.	1.75c
New York, del.	1.87c
Boston, del.	2.00½c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Lackawanna, N. Y., base	1.70c
Birmingham, Ala., base	1.75c
Pacific Coast, c.i.f.	2.00c
Do., wide flange	2.10c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham, Ala., base	1.75c
Lackawanna, N. Y., base	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
Philadelphia, del.	1.91c
New York, del.	1.90c
Boston, del.	2.02c
Pittsburgh, cold finish	1.75c
Pittsburgh, forg. qual.	1.85c

RAIL STEEL

*Chicago Heights	1.50c
*Eastern mills	1.30c

IRON

Chicago, base	1.65c
New York, delivered	1.85c to 1.95c
Philadelphia, delivered	1.86c to 1.96c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
*Pitts., stock lengths, mill	1.60c
Chi., billet	1.65c to 1.75c
*Chi., rail steel	1.45c
Chi., rail steel, road, bridge and culvert	1.45c
Philadelphia, cut lengths	2.06c
Cleveland, cut lengths	1.75c

Cold-Finished Bars, Shafting

Min. 10,000 lbs. of kind and grade

Pittsburgh	1.70c
Chicago, Buff., Cleveland	1.75c
Detroit	1.90c
Eastern Michigan	1.95c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel
Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to 6.75 off
Carloads, Chicago dist.	7.00 to 7.50 off

Alloy Steel

Hot Rolled—F.o.b. Mills
Alloy Quality Bars, 2.65c, mill
(Differentials to various classes of consumers)

S.A.E.	Alloy Diff.	4600 .20 to .30 Mo.	
		1.25-1.75 Ni.	1.05
2000	0.25	5100 .80 - 1.10	
2100	0.55	Cr.	0.45
2300	1.50	51.00 Cr.	
2500	2.25	spring	0.20
3100	0.55	6100 bars	1.20
3200	1.35	6100 Spring	0.95
3300	3.80	Cr., Ni., Van.	1.50
3400	3.20	Carbon Van.	0.95
4100 .15 to .25		9250 (flats)	0.25
Mo.	0.50	9250 (rds.,sq.)	0.50

Strip, Hoops, Bands

Hot strip, to 6 in., Pitts.	1.60c
Do, 6 1/16 to 24-in., Pitts.	1.50c
Hot strip to 6 in. Chi.	1.60c
Do, 6 1/16 to 24-in.	1.50c
Cooperage hoop, Pitts.	1.60c to 1.70c
Do., Chicago	1.70c to 1.80c
Cold-roll, strip, Pitts., Cleve.	2.00c
Worcester, 3 tons over	2.20c

Rails, Track Material

Standard rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$21.00 to 23.00
50 to 75	18.00 to 20.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$32.00 to 34.00
Light rails, Chicago	$36.00
Angle bars, mills	2.75c
Spikes, railroad, mills	2.60c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.60c
Spikes, boat, barge, Pitts.	2.90c
Track bolts, Chicago	3.50c
Do, standard, jobbers	73 off list
Track bolts, Chicago	3.50c
Tie plate, mills	$37.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 75 off
Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.
Eagle list ..... 75 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 75 off
Tire bolts ..... 60 and 10 off
Stove bolts, 77½, 25 and 10 off in pkgs.; 86 off in bulk.
Rolled thread machine bolts, ⅝ x 6 and smaller take 10 per cent lower list

NUTS

Semifinished ..... 75 off

HEXAGON CAP SCREWS

Milled ..... 80-10-10-5 off
Upset 1 in. diam. and smaller ..... 85-10 off

SQUARE HEAD SET SCREWS

Milled ..... 80-5 off
Upset, 1 in. and smaller ..... 80-10-5 off
Upset, larger than 1 in. ..... 80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh	$2.50
Do. less carloads, 5 kegs or over	$2.90
Less than 5 kegs	$3.05
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	1.90c

Rivets

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. and smaller, Pitts., Chicago, Cleve.	70, 10 and 5 off

Bars

Buying Holds Fairly Steady as Third Quarter Price Appears Unchanged—Market Not Tested

BAR PRICES, PAGE 45

Chicago—Bar specifications are fairly steady, but releases from the automotive industry are spotty and are expected to be lighter from some interests over the remainder of the month. The outlook in farm implements is slightly better, movement of equipment from dealers' stocks being fairly active, although no early improvement in operations of the implement builders is in prospect. Bars are tested by only small lots, but 1.70c is well observed. This figure is expected to be continued into third quarter. Rail steel bars usually are 1.50c, Chicago Heights, higher prices having disappeared. Demand is quiet and unchanged.

Boston—Crucible Steel Co. of America has been awarded 50,000 pounds of 3-inch round steel for remelting for the Watertown, Mass., arsenal at 3.9923c a pound, delivered.

Henry Disston & Sons Inc., Philadelphia, previously reported low, has been awarded 100 tons of hot-rolled manganese steel bars for the Springfield, Mass., armory at 4.45c a pound, delivered. The bars are for rifle barrels.

New York—While no official announcements have been made, indications are increasing that 1.70c, Coatesville, on soft steel bars, will be reaffirmed for third quarter.

Philadelphia — One midwestern producer of commercial steel bars has opened books for third quarter at the unchanged price of 1.60c, Pittsburgh. Belief is gaining that bar mills generally will reaffirm this price. Demand is little improved.

Pittsburgh — Spotty steel bar demand shows only moderate improvement in some quarters, with further declines in others. Specifications from automobile producers have not been in noteworthy volume recently. Other users are prone to delay in forward purchasing. The base of 1.60c is generally quoted.

Youngstown, O.—Slightly more generous volume of specifications for common steel bars is enabling valley bar mills to operate at a fairly satisfactory rate. Demand for alloy steel bars from auto partsmakers also continues fair. Soft steel bars are 1.60c, Pittsburgh, which also seems likely to be reaffirmed for third quarter.

Cleveland—Common steel bar prices have been reaffirmed at 1.60c, base, Pittsburgh, and 1.65c, base, Cleveland, for third quarter by some makers. The market is quiet and little interest is appearing for more than immediate requirements.

Cold-Finished Prices Put On New Basing Points

Cold Finished Prices, Page 45

Pittsburgh—New basing points are being set up on cold-finished steel in application of the new 1.70c, Pittsburgh, single price policy announced recently. In addition to the Pittsburgh base of 1.70c, Buffalo, Cleveland and Chicago will have a base price of 1.75c, reflecting the higher rate on hot-rolled bars usually applying. Detroit and eastern Michigan are made tentative basing points with 1.90c and 1.95c applying, respectively. The latter is for points to which freight is not more than 31.00c from Pittsburgh. At other points in Michigan with 32 and 33 cents freight the base will be 1.75c, Cleveland or Chicago, whichever has the lower freight charge to destination. These prices are announced for third quarter by a leading producer.

Specifications on contracts at the old price will be accepted until June 30, subject to shipment during July. No unfilled orders at the old price will be carried beyond July 31.

Tin Mill Operations Improved Slightly

Tin Plate Prices, Page 45

Pittsburgh—Tin mill operations have expanded slightly to close to 50 per cent. Despite the fact that canmakers' finances still are a deterring factor, there is a confident tone in the market, foreseeing possibly a higher rate of mill operations soon. The $4.75 price per base box continues.

Youngstown, O.—Tin plate mills continue to operate at 45 to 50 per cent. A slight tapering in volume of specifications is noted.

Plates

Some Mills Naming 1.60c, Pittsburgh, for Third Quarter—Miscellaneous Orders Small

PLATE PRICES, PAGE 45

Chicago — Tank work, although still extremely quiet, is slightly more active, with a few small miscellaneous projects scheduled for action soon. No change is noted in requirements of railroad car shops, and demand for line pipe construction is dull. The 1.70c price still is partly nominal.

Philadelphia—Plate prices will be reaffirmed at 1.70c, Coatesville, Pa., according to present indications. Oil company buying is the only feature of a generally dull market. The Mathias ship yards, Camden, N. J., have let some plates for two patrol boats. Mazzalo & Marano, Philadelphia, were low on the general contract for installing 275 tons of 48-inch steel pipe for the city.

Pittsburgh—Plate activity has improved in some quarters. A district mill was figuring last week on the Canton Car Co.'s requirements for 1200 tons of plates for the new Wheeling & Lake Erie railroad gondolas, but the business has not been placed officially. An Evansville, Ind., oil company may take tonnage of plates for tanks and possibly for some barge work. Plans are being prepared at Washington for a cutter type suction dredge for service on the Ohio river. The 1.60c base price probably will be reaffirmed for third quarter.

Cleveland—Plate orders are small, with the price holding at 1.60c, base, Pittsburgh, and some makers indicating that figure will be named for third quarter. The Buffalo Tank Corp., Buffalo, has been awarded tanks for government use in the Cincinnati district, requiring 865 tons of plates.

Contracts Placed

865 tons, government tanks, Cincinnati district, to Buffalo Tank Corp., Buffalo.

Unstated tonnage, two tanks of 1,500,000 gallon combined capacity for Fuel Oil Corp., Detroit, at Sault Ste. Marie, Mich., to Chicago Bridge & Iron Works, Chicago.

Contracts Pending

1400 tons, ten to 100 tanks, Wright

field, Buffalo, Buffalo Tank Corp., Buffalo, low.

275 tons, 48-inch steel pipe, Philadelphia; Mazzalo & Marano, Philadelphia, low for general contract.

178 tons, two whirler derricks for United States engineer, Memphis, Tenn.; Midland Barge Co., Midland, Pa., low.

100 tons, tank and tower, hospital, Batavia, N. Y.

100 tons, 6-inch welded steel pipe, Upland, Calif., bids June 2.

Wire Prices For Third Quarter at Present Level

Wire Prices, Page 45

Chicago—Wire producers will accept third quarter business on the basis of recent quotations of $2 for wire nails in carloads, and 2.25c for plain wire. Little interest is being shown in future requirements, and specifications recently have lessened.

Worcester, Mass.—Wire prices, which continue steady, are being reaffirmed for third quarter. Buying is spotty, showing little general improvement, although some specialty departments are doing moderately well. Most of the navy contract, opening May 3, steel and a small tonnage of phosphor bronze wire rope, went to the Wire Rope Corp., New Haven, Conn. Five classes call for a total of $17,023.80. Also 14,400 feet of steel rope for Norfolk at 27.3c delivered; 7280 feet, Mare Island, at 28.00c; and 1200 feet, Boston, at 16.00c. This mill also took sizing strand items at $887.60.

Philadelphia — For the naval aircraft factory bids close June 7 on 100,000 feet of 5/32 inch, 7x19 construction, tinned, extra-flexible steel cable and 50,000 feet 1/8-inch cable of the same type.

Prices on wire products have been reaffirmed for third quarter. Little gain in business is noted.

Pittsburgh—Unchanged prices on nails and plain wire have been announced for third quarter. Effective June 1 the following fall dating terms on woven wire fencing involving lots of 500 rods or more will be allowed: A maximum discount of 5 per cent for cash Aug. 10; 4 per cent, Sept. 10; 3 per cent, Oct. 10; and 2 per cent, Nov. 10; with due net Dec. 31. Demand for nails and wire products, while still at a minimum, is not concerning itself over prices and the $1.95 nail minimum and 2.20c wire base, appear to be firm.

Cleveland—Plain wire prices have been reaffirmed for third quarter at 2.20c, Cleveland; and nails at $1.95 per keg in carloads to jobbers and $2.10 in carloads to dealers.

Railroads

Rail Backlogs Being Reduced And Mills Work Intermittently —Further Buying Is Absent

TRACK MATERIAL PRICES, PAGE 45

New York—Domestic freight car bookings in May involved 60 cars, compared with nothing in April. Further comparisons follow:

	1932	1931	1930	1929
Jan.	159	100	5,072	13,196
Feb.	35	50	17,027	15,944
March	105	2,166	6,118	12,023
April	0	2,798	1,997	8,205
May	60	20	1,392	7,562
5 mo.	359	4,134	31,606	56,930
June	.....	1,910	998	5,886
July	.....	617	1,389	341
Aug.	.....	1,304	1,111	2,854
Sept.	.....	703	576	4,517
Oct.	.....	980	4,116	19,506
Nov.	.....	35	2,621	6,361
Dec.	.....	11	2,729	9,710
Total	.....	10,694	45,146	106,105

Buffalo—Rail mills here have been in operation for a week on an order for delivery up the lakes by steamer. This order has been completed and no further tonnage is in sight for immediate production.

Pittsburgh — Railroads still are lending no indication that they will improve over the recent dullness in releases. It is expected that the Pennsylvania railroad will release some steel already contracted for in eastern electrification work but it is problematical whether the recent extension of credit will be of benefit in new steel orders. Equipment buying has been centered recently on the disposition of plates and shapes in the Wheeling & Lake Erie's gondola order and it is possible some activity may come about through the Western Maryland railroad's decision to convert about 150 steel gondolas into drop-end gondolas.

Chicago—Releases of track material remain fairly steady, but no new rail buying has appeared and backlogs are declining. The car market is dull and repair work also is at a low ebb.

Toronto, Ont.—Dominion Steel & Coal Co., Sydney, N. S., has received an order from the Dominion government for 15,000 tons of steel rails for the Atlantic division of the Canadian National railways.

Car Orders Placed

St. Louis & San Francisco, conversion of 35 stock cars into double deckers at own shops, Springfield, Mo.

Rail Orders Placed

Canadian National, 15,000 tons rails, to Dominion Steel & Coal Co., Sydney, N. S.

Semifinished Steel Orders Still Restricted

Wire prices, Page 45

Pittsburgh—Users of semifinished steel have not been led by price increases for third quarter to place current orders. May's specifications were unchanged from those of April. Wire rods appeared in slightly better demand last week, as one producer increased operation to complete a fairly large rush order. Sheet bars, billets and slabs generally are $26, base.

New York—An effort is being made by some producers to discourage the sale of discard billets for rerolling purposes.

Youngstown, O.—Some disposition is apparent upon the part of important producers of billets, sheet bars and slabs to avoid for the present further discussion with consumers of the probable price schedule for third quarter. An advance of $2 a ton as suggested some days ago is being contested vigorously by consumers.

Cleveland—Some makers now are quoting $33, base, for third quarter, for forging billets of standard quality. The market for semifinished steel is quiet, and it is indicated that production here will be reduced slightly this week.

Mirrors of Motordom

(*Concluded from Page* 21)

are banking heavily upon their new, radical body designs The private opinion of many automotive engineers on the numerous gadgets put on 1932 models for talking points is critical Chrysler with its patented floating power has revived the specter of patents, from which the automobile industry has been comparatively free since the Selden era.

Detroit holds to the original estimate of 90,000 units for Ford in June, with an average of 4500 a day, 5 days a week, the goal. Most increase will come from expansion at branch assembly plants. Plymouth in June will probably assemble about 18,000 units, against 20,000 in May.

Structural Shapes

Awards Hold Up, with 31,000 Placed—Two Postoffice Jobs at Washington Take 15,900 Tons—More Large Requirements Are Nearing The Closing Stage

STRUCTURAL SHAPE PRICES, PAGE 45

New York—Bids are closing this week on New York Central railroad work, taking close to 10,000 tons of structural steel. George A. Fuller Co., New York, is low on the general contract for the department of justice building, Washington, requiring 10,000 tons. Pending public work tonnage is heavy, with more bridge work active. Bonding requirements on several large projects are more exacting. More small fabricating shops are using imported steel, some of which is reported set down at dock here at near 1.00c. One vessel which arrived from Belgium last week had a cargo made up largely of structural steel. Meanwhile domestic plain material is unchanged at 1.70c, eastern mill.

Boston—Structural lettings for the week approximate 800 tons. Bids went in last week on the Salem, Mass., postoffice, but except for several other small federal projects inquiry is light, with plain material steady at 1.60c, Pittsburgh.

Philadelphia—Award of 8400 tons for the postoffice in Washington by McCloskey & Co., Philadelphia, features structural buying here. This went to the Fort Pitt Bridge Works Co., Pittsburgh. Other sizable orders include 2200 tons for a high school at Scranton, Pa., and 1200 tons for bridge approaches at Annapolis, Md.

Pittsburgh—One of the leading independent structural fabricators in this district for the second consecutive week has closed on an important project. Last week the 8400-ton postoffice at Washington was awarded. Although building in this immediate district is at a low ebb fabricators are finding some work on which to figure. The structural material in the Beaver, Pa., locks has been awarded. A Pennsylvania state letting June 16 calls for several structural projects. Plain material generally is 1.60c, Pittsburgh.

Buffalo—The best structural outlook in many months is noted here. Bids are in or will be received within the next 30 days on contracts for which more than 7000 tons of shapes will be required. Among them is the Buffalo armory, 5000 tons.

Cleveland — An inquiry for 470 tons of shapes for a packing house at Piqua, O., represents the largest new job to develop in this district. Others are small, but numerous. Fabricators expect to figure soon on a number of state highway bridges. Fabricated steel prices appear a little firmer, and plain shapes remain at 1.60c for current and third quarter requirements.

Chicago—Structural steel projects usually involve only small lots, practically all public work. Fabricators have booked several small bridges in nearby territory. Inquiry is slow and unimproved, most items being for less than 500 tons. Specifications for plain material are fairly steady, with the market 1.70c, Chicago.

Birmingham, Ala.—Structural fabricators are working on some backlogs. New business is light. Government work may bring in some contracts, but the prospects are limited.

Contracts Placed

8400 tons, postoffice, Washington, to Fort Pitt Bridge Works Co., Pittsburgh, through McCloskey & Co., Philadelphia, general contractor.

7500 tons, postoffice addition, Washington, to American Bridge Co., Pittsburgh, through B-W Construction Co., Chicago, general contractors.

3500 tons, bulkhead gates, Hoover Dam, Las Vegas, Nev., two 50 x 50-foot bulkhead gates and gate frames, to Independent Bridge Co., Pittsburgh; two 50 x 35 foot stony gates and frames, to Lakeside Bridge & Steel Co., Milwaukee; two twin hydraulic cylinder bulkhead gate hoists, to Hardie-Tynes Mfg. Co., Birmingham, Ala.; two stony gate hoists, to Reading Iron Works, Reading, Pa.

2300 tons, Montgomery Locks, Beaver, Pa., 640 tons shapes to Independent Bridge Co., Neville Island, Pa.; 1700 tons 25-pound piling to Jones & Laughlin Steel Corp., Pittsburgh, latter through Booth & Flinn Ltd., Pittsburgh, general contractors.

2200 tons, high school, Scranton, Pa., to Bethlehem Fabricators Inc., Bethlehem, Pa.

1200 tons, bridge approaches, Annapolis, Md., to Belmont Iron Works, Philadelphia; steel for span now being figured.

770 tons, radio towers for department of commerce, Washington, to Blaw-Knox Co., Blawnox, Pa.

726 tons, H street bridge, Sacramento, Calif., to Moore Drydock Co., Oakland, Calif.

500 tons, government bridge, Englehart, Ont., to Hamilton Bridge Co., Hamilton, Ont.

400 tons, school, Clinton, N. Y., to Shippers Car Line Corp., Milton, Pa.

380 tons, superstructure, Miantonomi bridge No. 270, Richmond, R. I., to American Bridge Co., Pittsburgh; Rhode Island state board of public roads, bridge department.

360 tons, transit shed and warehouse, Richmond, Va., to Cruickshanks Iron Works, Richmond; City Building Corp., Richmond, contractor. Hankins & Johann awarded aluminum work, including sides.

350 tons, state bridge, Kendall county, Texas, to Virginia Bridge & Iron Co., Roanoke, Va.

350 tons, United States immigration station, Galveston, Tex., to Petroleum Iron Works, Beaumont, Tex.; James McHugh's Sons Inc., Chicago, general contractor.

275 tons, Garwood Ferry bridge, Stockton, Calif., to Moore Drydock Co., Oakland, Calif.

270 tons, school, Oil City, Pa., to Pittsburgh Bridge & Iron Works, Pittsburgh.

200 tons, piling, foundations, postoffice, Cincinnati, to Carnegie Steel Co., Pittsburgh; MacArthur Concrete Pile Co., general contractor.

198 tons, bridge SAP 812-E, Hammond, Okla., to Petroleum Iron Works, Beaumont, Tex.; W. R. Johnson, Weleetka, Okla., general contractor.

180 tons, bridge, Pennsylvania railroad, Stroudsburg, Pa., to American Bridge Co., New York.

178 tons, state highway bridges, Fallon and Custer counties, Montana, to Minneapolis Steel & Machinery Co., Minneapolis; Rue Bros., Bismarck, N. Dak., general contractors.

175 tons, highway bridge, St. Croix county, Wisconsin, to Clinton Bridge Works, Clinton, Iowa.

150 tons, Trumbull dormitory, Yale University, New Haven, Conn., to Palmer Steel Co., Springfield, Mass.; Marc Eidlitz & Son, New York, contractors.

150 tons, highway bridge, Marinette county, Wisconsin, to Wausau Iron Works, Wausau, Wis.

146 tons, including 62 tons of piling, five bridges for Monterey county, Salinas, Calif., to Moore Drydock Co., Oakland, Calif.

125 tons, bridge, Friendsville, Md., to American Bridge Co., New York, through Mullan Contracting Co., Baltimore.

100 tons, building, Massachusetts College of Pharmacy, Boston, and dormitory, Andover-Newton Theological Institute, Newton, Mass., to New England Structural Co., Boston.

100 tons, 300,000-gallon tank, Geneva, Ill., to Chicago Bridge & Iron Works, Chicago.

100 tons, telephone building, Monterey, Calif., to McClintic-Marshall Corp., Bethlehem, Pa.

Awards Compared

	Tons
Awards, week ended June 4	30,843
Awards, week ended May 28	31,886
Awards, week ended May 21	20,623
Awards, this week in 1931	26,704
Av. weekly awards, 1931	34,236
Av. weekly awards, 1932	15,351
Av. weekly awards, May	17,402
Awards to date, 1931	879,329
Awards to date, 1932	353,077

100 tons or more, state bridge 57, Osceola Mills borough, Pa., shapes to Guibert Steel Co., Pittsburgh; bars to Taylor-Davis Co., Philadelphia; Bailey Construction Co., Phillipsburg, Pa., general contractor.

Contracts Pending

10,000 tons, United States department of justice buildings, Washington, George A. Fuller Co., New York, low.

9000 tons, double track viaduct five blocks long, New York Central railroad, New York; bids June 7.

5000 tons, piling, United States engineering, Memphis, Tenn.; bids in.

3000 tons, addition for Ontario Hydroelectric Power commission, Toronto, Ont.; bids to be called for in June.

1600 tons, medical arts building, Duluth.

1000 tons, bridge, Beaver, Pa., bids June 16.

850 tons, bridge, Missouri Pacific railroad, Myrtle, Ark.

800 tons, buildings for Dairy Delivery Co., San Francisco, bids opened.

700 tons, highway and bridge projects in Missouri, bids opened June 7, by Missouri highway commission, Jefferson City, Mo.

600 tons, Girls' high school, Seventeenth and Spring Garden Philadelphia; specifications out this fall.

590 tons, bridge, Ocean City, N. J.; general contract awarded to the Merritt-Chapman & Scott Corp., New York, previously noted as low.

506 tons, bridge work, Beckham county, Okla., for Oklahoma highway commission; bids June 7.

491 tons, bridge, Jefferson county, Tenn.; International Bridge Co., Evansville, Ind., low.

470 tons, building, Valdecker Packing Co.; Piqua, O.

400 tons, highway bridge, Cook county, Ill.

300 tons, state armory, Jamestown, N. Y.; Longacre Construction Co., general contractor.

300 tons, bridge, Big Flats, N. Y.; bids June 2.

285 tons, Pennsylvania state bridges in Sullivan, Mifflin and Crawford counties, respectively; bids opened June 1.

275 tons, St. Joseph hospital, Pasadena, Calif., bids opened.

260 tons, bridge, Salamanca, N. Y.; bids June 2.

250 tons, highway bridge over Cheyenne river, Custer, S. Dak.

200 tons, highway and bridge work, Pemiscot and Christain counties, Missouri; Missouri highway commission, Jefferson City, Mo.

184 tons, two state bridges near San Simeon, Monterey county, Calif., bids June 15.

161 tons, bridge, Breckenride county, Ky.; Vincennes Bridge Co., Vincennes, Ind., low.

150 tons, postoffice, Salem, Mass.; bids in June 3.

148 tons, bridge, Bullitt county, Kentucky; Vincennes Bridge Co., Vincennes, Ind., low.

125 tons, telephone exchange, Brookline, Mass.

115 tons, bridge, Clear creek, Yavapai county, Phoenix, Ariz., bids June 18.

100 tons, postoffice, Merced, Calif., North-Moller Co., Jackson, Mich., low.

100 tons, addition to high school, Philadelphia; bids asked.

Unstated, Pennsylvania state bridge, Beaver county; bids June 16.

Unstated tonnage, new transmitter for Station WEBC, Superior, Wis.

Unstated tonnage, postoffice, Sanford, Me.; V. & M. Construction Corp., Yonkers, N. Y., low.

Concrete Bars

Awards Are Larger—New Jobs Develop Inquiries for 10,560 Tons—1200 Tons to Be Let for Washington Postoffice — Improvement in Road Work in Some Districts

REINFORCING BAR PRICES, PAGE 45

New York—Contractors are slow to close on pending reinforcing bars, with several thousand tons active in this district. About 670 tons for a hospital on Long Island has been placed. Welded steel mesh buying thus far this season has been about 40 per cent of last year's volume. There has been a slight improvement in highway demands, but little increase in building requirements. Mesh prices are holding well, but reinforcing bars are easy with 1.95c, New York, mill lengths, shaded to 1.85c on some business.

Boston—Reinforcing bar buying is light, mainly in small lots, including bars for the Portland, Me., postoffice foundations to be furnished by the Bancroft & Martin Rolling Mills. Contract for the Pawtucket, Mass., bridge went to John J. McHale & Sons, Pawtucket. Prices are easy on domestic material on a basis of 1.50c to 1.60c, Pittsburgh.

Philadelphia—Award of 720 tons for warehouses for the Hershey Chocolate Co., Hershey, Pa., features business in reinforcing bars here. McCloskey & Co. are expected to place 1200 tons of reinforcing bars for the postoffice in Washington shortly. Approximately 1900 tons of bars are required for the department of justice building, Washington, on which George A. Fuller, New York, is low. Cut lengths are moving in carlots at about 1.75c, Pittsburgh.

Pittsburgh—Reinforcing steel bar shipments are displaying an upward trend. A large Pennsylvania state highway letting goes in June 16, and a 700-ton highway job at Ocean City, N. J., has attracted local interest. Contractors are expected to bid on the 500-ton officers' barracks in Panama. Stock lengths are firm at 1.60c, Pittsburgh.

Chicago—Nearly all recent reinforcing bar projects consist of government work. A veterans' hospital has been placed at Danville, Ill., while several postoffice jobs are being closed. Prices are weak and some low figures have been developed recently. Rail steel bars now generally are 1.45c, Chicago.

Birmingham, Ala. — Road work promises some demand for reinforcing bars, but business so far has been negligible. Production is light.

Cleveland — Highway work continues to absorb a fair amount of steel. For road work in Erie county, Pa., for which Baldwin Bros., Cleveland, are general contractors, 85,000 square yards of mesh will be supplied by Wickwire Spencer Steel Co. Ohio is planning an active road-building program for this summer. Several awards for buildings in this district are expected to be made soon.

Awards Compared

	Tons
Awards, week ended June 4	6,211
Awards, week ended May 28	4,274
Awards, week ended May 21	3,275
Awards, this week, 1932	9,040
Av. weekly awards, 1931	6,808
Av. weekly awards, 1932	4,520
Av. weekly awards, May	3,812
Awards, to date, 1931	167,424
Awards to date, 1932	103,962

Contracts Placed

2500 tons, Pine Canyon dam, Pasadena, Calif., to unnamed interest.

720 tons, warehouse, Hershey Chocolate Co., Hershey, Pa., to Taylor-Davis Co., Philadelphia.

670 tons, Meadowbrook hospital, Long Island, N. Y., to Carroll-McGreary & Co., New York; C. T. Wills Inc., general contractor.

500 tons for bridge, Albany, N. Y., to Joseph T. Ryerson & San Inc., New York.

400 tons, warehouse, Sears, Roebuck & Co., Union City, N. J., to Joseph T. Ryerson & Son Inc., New York.

300 tons, Veteran's hospital, Danville, Ill., to Concrete Engineering Co., Chicago.

215 tons, state bridge, Stilaguamish river, Silvana, Wash., to Pacific Coast Steel Corp., Seattle, Wash.

200 tons, postoffice and courthouse, Terre Haute, Ind., to Concrete Engineering Co., Chicago.

135 tons, postoffice, Boston Rouge, La., to Laclede Steel Co., St. Louis, Algernon Blair, Montgomery, Ala., general contractor.

125 tons, postoffice, Columbus, S. C., to Connors Steel Co., Birmingham, Ala.

124 tons, highway work, Benson-Douglas highway, Pheonix, Ariz., to unnamed interest.

122 tons, 11 street bridge, American river, Sacramento, Calif., to unnamed interest.

100 tons, St. Joseph hospital, Pasadena,

Calif., to unnamed interest.
100 tons, baseball bleachers, University of California, Berkeley, Calif., to Pacific Coast Steel Corp., San Francisco.
Unstated tonnage, 85,000 square yards, mesh, state highway, Erie county, Pennsylvania, to Wickwire Spencer Steel Co., New York; Baldwin Bros., Cleveland, general contractor.

Contracts Pending

3837 tons, San Gabriel dam No. 1, Los Angeles county, Calif.; bids called for.
1900 tons, department of justice building, Washington, George A. Fuller, New York, general contractor.
1200 tons, postoffice, Washington; McCloskey & Co., Philadelphia, expected to award shortly.
700 tons, state highway work, Ocean City, N. J.
600 tons, state bridge Ocean City, N. J.; Merritt-Chapman & Scott Corp., New York, awarded general contract.
600 tons, high school, Scranton, Pa.; expected to be awarded at once by William Steele & Sons, Philadelphia, general contractors.
500 tons, officers' barracks, Ft. Clayton, Panama canal zone.
500 tons, warehouse ,Sears, Roebuck & Co., Brooklyn, N. Y.
250 tons, viaduct, New York Central railroad, New York.
225 tons, highway work in San Gabriel forest United States bureau of public roads, San Francisco; bids June 16.
135 tons, trestle on Park boulevard, Oakland, Calif.; bids being taken.
113 tons, two state bridges near San Simeon, Monterey county, Calif.; bids June 15.

Intervene in Rate Case

Washington—Interstate commerce commission has permitted the American Steel & Wire Co., Carnegie Steel Co., Illinois Steel Co., and the Tennessee Coal, Iron & Railroad Co. to intervene in the consolidated southwestern cases, export, import and coastwise rates. If oral argument is granted they will be allowed to participate.

Upholds Nebraska Rate

Washington—Interstate commerce commission has found that carload rates on iron and steel articles from Steelton, Minn., Duluth, Milwaukee, Chicago and certain other points in central territory to Beatrice, Nebr., higher than to Missouri river crossings are not unduly prejudicial and the complaint has been dismissed. It was filed by Beatrice Steel Tank Mfg. Co. against the Burlington railroad.

New officers for the Philadelphia chapter of the American Society for Steel Treating have been elected as follows: Chairman, N. L. Mochel, Westinghouse Electric & Mfg. Co.; vice chairman, T. J. Moore, Edgar T. Ward's Sons Co.; and secretary-treasurer, A. O. Schaefer, Midvale Co.

Pipe

Kansas Pipe Line Is Awarded, Taking 10,000 Tons—St. Paul Places 1200 Tons of Cast Pipe

PIPE PRICES, PAGE 61

Youngstown, O. — Youngstown Sheet & Tube Co. is understood to have been awarded the 150-mile pipe line extension for the Standard Oil Co. of Kansas. The pipe is 8 inches in diameter, and approximately 10,000 tons will be required.

A slight gain is noted in the volume of wrought pipe of smaller sizes placed for building purposes. Seamless pipe demand also continues to show improvement, namely for the 7-inch size for oil field purposes.

Jobbers now are beginning to purchase merchant pipe more generally than in months.

Boston — Cast pipe buying is in small lots while inquiry has slumped. Somerville, Leominster, Hudson and Beverly, Mass., have placed small orders with three foundries. Prices continue weak. Utilities are not active for pipe. A proposed steam line extension and additional water expansion at Dorchester, Mass., may take a fair tonnage of steel pipe.

New York—On ordinary tonnages of cast pipe few foundries are doing better than $23, plant, with that price shaded on lots of 250 tons or more. Buying and inquiry are light, although New York city is expected to inquire for several thousand tons this month. State jobs on which bids are being taken will require several hundred tons. Several lots are also pending for eastern Pennsylvania. Close to 500 tons for Elbridge, N. Y., went to the Burlington, N. J., foundry.

Second section of pipe for the Passaic valley water commission has been awarded the Lock Joint Pipe Co., Ampere, N. J., but all work has been held up, it is said, pending dissolution of an injunction by taxpayers. Thomas Burke, Philadelphia, bidding on steel pipe, approximately 2300 tons, was understood to have been low on this section.

Pittsburgh — Activity in standard pipe still is slow and business in all grades of tubular products displays little change. Pipe producers have little hope that any of the present volume of pending line work will be closed up in the near future.

Chicago—Cast pipe orders and inquiry are lighter, the bulk of activity being made up of small lots with only a few large items appearing. Over 2000 tons is pending for Chicago and St. Louis, while St. Paul has placed 1200 tons in addition to a smaller lot awarded recently. Chicago is taking bids on 28,000 feet of boiler tubes.

Birmingham, Ala. — Awards are coming in slowly, and in small lots. Cast pipe production is held down to 30 per cent.

Cast Pipe Placed

1200 tons, St. Paul, to United States Pipe & Foundry Co., Burlington, N. J.
450 tons, 6, 8 and 10-inch, Elbridge, N. Y., to United States Pipe & Foundry Co., Burlington, N. J.
175 tons, federal penitentiary, Lewisburg, Pa., to United States Pipe & Foundry Co., Burlington, N. J. Suburban Engineering Co., New York, general contractor.
200 tons, 10 and 14-inch, sewage pumping station, Brooklyn, N. Y., to Warren Foundry & Pipe Co., Wharton, N. J.
130 tons, 8 to 12-inch, Somerville, Mas., to Donaldson Iron Works, Emaus, Pa.
130 tons, 8 to 12-inch, Somerville, Mass., divided equally, R. D. Wood & Co., Philadelphia, and Warren Foundry & Pipe Co., Wharton, N. J.
100 tons, 6 to 12-inch, Hudson, Mass., to Warren Foundry & Pipe Co., Wharton, N. J.
100 tons, 12-inch, Beverly, Mass., to Warren Foundry & Pipe Co., Wharton, N. J.
100 tons, armory, Peekskill, N. Y., to Donaldson Iron Works, Emaus, Pa.
100 tons, state highway, Tuckahoe, N. Y., to Alabama Pipe & Foundry Co., Anniston, Ala.

Steel Pipe Placed

10,000 tons, approximately, 8-inch, Standard Oil Co. of Kansas, to Youngstown Sheet & Tube Co., Youngstown, O.
Unstated tonnage, 1940 feet, steel pipe, United States engineer, Cincinnati, to Treadwell Construction Co., Midland, Pa.; McClintic-Marshall Corp. awarded 420 feet of steel pipe.

Cast Pipe Pending

950 tons, 6, 8 and 12-inch, Oklahoma City, Okla.; American Cast Iron Pipe Co., Birmingham, Ala., and National Cast Iron Pipe Co., Birmingham, Ala., low.

Steel Pipe Pending

28,000 feet, 4-inch seamles boiler tubes for Mayfair pumping station, Chicago; bids June 8.
Unstated tonnage, 10 and 16-inch I.D. seamless steel flasks for gas ejecting and recoil cylinders and secondary rammers, four cruisers, navy, National Tube Co., Pittsburgh, low.
Unstated tonnage, 10,400 feet welded steel pipe, small sizes, Wright Field, Dayton, O.; bids June 13.

Strip

Hot-Rolled Extras Revised to Provide Single Base Price on All Widths—Prices Unchanged

STRIP PRICES, PAGE 45

Pittsburgh—Effective June 1, Carnegie Steel Co. has made a revision in extras for hot-rolled flats under ¼-inch thick, variously known in the trade as hot-rolled strip, hoops and bands. The principal feature is an adjustment of the extras to permit selling these products on a single price base. This supersedes the present practice of using one base for widths 6 inches and under and another base price for wider sizes up to 24 inches. The new card will apply on third quarter sales. Quantity, cutting, slitting and pickling extras have not been changed. A valley maker has named 1.45c, Pittsburgh, the new price to the general trade, 1.50c for small miscellaneous lots.

An upturn in ordering of cold-rolled strip was noticeable last week by one strip producer, the movement coming largely from cash register manufacturers. Mill operations on hot-rolled appear better on the wider sizes. June specifications are expected to be improved over May for both hot and cold-rolled. Last week's operations at about 35 to 40 per cent of capacity were improved.

Philadelphia—Hot strip is moving sluggishly at 1.40c and 1.50c, Pittsburgh, on the wide and narrow, respectively, in car lots. Cold strip is 2.00c, Pittsburgh, in car lots.

Youngstown, O. — Issuance of a new and revised card of extras on hot-rolled strip, dated June 1, has brought adherence from all stripmakers here. The new extras generally are about $1 a ton lower than the formerly current list. The new single-price base is 1.45c, Pittsburgh, to the general trade and 1.50c to the miscellaneous buyers.

Cleveland—Instead of the usual prices of 1.40c to 1.50c, Pittsburgh, respectively for wide and narrow widths of hot-rolled strip, some makers now have gone to a single base of 1.45c for widths from ⅜-inch up to 23 15/16-inches, inclusive, to the general trade, and 1.50c for miscellaneous small lots. Cold-rolled strip has been reaffirmed at 2.20c, base, Cleveland, for third quarter.

Chicago—Strip producers defer announcement of third quarter prices but an advance on hot-rolled material is anticipated. Cold-rolled strip is expected to continue on the basis of 2.00c, Pittsburgh. Hot strip is steady at 1.50c and 1.60c, Chicago. New business in either hot or cold-rolled strip is not expanding as steadily as makers found it a week ago.

Steelmaking Rate Hits New Low At 21; Is Easing Further

Pittsburgh—Steel output last week averaged 20 per cent, off one point. This week's schedules will in turn be off another point, to about 19. Steelworks blast furnaces active number but 7 of 54, following blowing-out of a large independent stack here last week. Strip output was somewhat improved at about 35 to 40 per cent last week, but this week will be considerably lower. Tin plate operations are higher at 50 per cent; pipe is dragging at 10 to 15.

Operations, week ended June 4	**21**
Operations, week ended May 28	**23**
Operations week ended May 21	**25.5**
Operations, this week, 1931	**40**
High for 1932, Feb. 6	**28.5**
Low for 1932—June 4	**21**

Philadelphia — Eastern steelmaking operations are down one point to 12 to 13 per cent, with incoming business insufficient to sustain this rate.

Buffalo — Operations in the Buffalo district will drop back eight points this week to 14 per cent, according to tentative schedules. Last week eight furnaces were in production. Five are scheduled this week.

Youngstown, O.—Steelmaking operations here in the week ended June 4 averaged 19 per cent, off five points, and probably will continue at that rate this week. Nineteen out of 83 open-hearth furnaces are melting. Carnegie Steel Co., which suspended at its Ohio works, is expected to resume in a week.

Cleveland—Steel ingot production held at 38 per cent during the week ended June 4, but for the current week will be down to approximately 33 per cent. American Steel & Wire Co. will continue with five in operation; Corrigan, McKinney Steel Co., will keep on four, but operate at a slower rate; Otis Steel Co., which operated four last week, is due to take off at least one, and possibly two. Otis will again operate its 112 and 152-inch plate mills three days this week; its 24 and 72-inch strip mills will remain on, but the 72-inch unit probably will finish this week.

Chicago — Ingot production was affected but slightly during the past week by the holiday, holding around 20 per cent. This may be compensated for by a fractional gain during the coming week. Blast furnace schedules are unchanged with eight of 36 steelworks stacks in the district active.

Birmingham, Ala. — Steelmaking operations continued last week at 23 per cent, with this rate also applying this week.

Warehouse Volume Less As Season Progresses

Warehouse Prices, Page 61

New York — Revised base price and extras on cold-finished steel were to become operative this week. Volume in all lines is light, June opening at about the rate of May which was little improved over April.

Pittsburgh — Tonnage of steel products from stock during May was less than in April. One exception was sheets, which were seasonally improved. Prices hold former levels.

Cleveland—New warehouse prices on cold-finished bars, revised in accordance with the new mill base of 1.70c, with quantity differentials, are 2.95c, base, for rounds and hexagons and 3.45c for flats and squares.

Detroit—The new base and extras on cold-finished steel have been well accepted and are now an integral part of the market. Warehouse demand for iron and steel remains at about the April-May level, with prices unchanged.

Chicago—Sales are fairly well maintained, recently being at a better rate than usual for the month end. May orders were slightly under April. Cold finished bar prices have been reduced $3 a ton, to 2.95c, in conformity with the recent revision in mill quotations.

Philadelphia—Effective June 6 jobbers here will quote 3.10c on rounds and hexagons and 3.60c on flats and squares, plus less-carload differential from nearest basing point. The same rates go into effect in New York and New England June 13. Quantity extras on cold-finished bars have been adopted, as follows: $1.25 on less than 300 pounds, 75 cents on 300 to 499 pounds, 25 cents on 500 to 999 pounds.

Raw Material Prices

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago, furnace	$16.00
Pittsburgh, dist. fur.	15.50
Pittsburgh, delivered	16.13 to 16.63
Valley furnace	14.50 to 15.00
Cleveland fur., local del.	15.50
Philadelphia, delivered	14.26 to 14.76
Virginia furnace	17.50
Granite City, Ill., fur.	16.50 to 17.50
Buffalo, fur., local del.	16.00
Buff., all-rail, Boston	19.91 to 20.41
Buff., all-rail, Brooklyn	18.90 to 19.40
Buff., all-rail, Newark	17.28 to 17.78
Ala., Bir. fur., local del.	11.00
Ala., Nor. del., Bir. base	10.00
Alabama, del. Chicago	16.01
Alabama, del. St. L.	14.42
Alabama, del. Cincinnati	13.82
Ala., Phila., dock del.	15.00 to 15.25
Ala., Balt., dock del.	15.00
Alabama, New York dock	15.50
Ala., Boston dock del.	16.50 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	13.82
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	16.50
Buff., all-rail, Brooklyn	19.40 to 19.90
Buffalo, all-rail, Newark	17.78 to 18.28
Buff., all-rail, Boston	20.91 to 21.41
Virginia furnace	18.00
Eastern, del. Phila.	14.76 to 15.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	17.50
Eastern, del. Phila	15.26 to 15.76

MALLEABLE

Valley furnace	14.50 to 15.00
Cleveland fur., local del.	15.50
Pittsburgh dis. fur.	15.50
Pittsburgh, delivered	16.13 to 16.63
Chicago, furnace	16.00
Buffalo fur., local del.	16.50
Eastern Penna., delivered	16.13 to 19.41
Granite City, Ill., fur.	16.50 to 17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	14.50 to 15.00
Pittsburgh, delivered	15.13 to 16.13
Eastern Penn., del.	14.50 to 15.00
Buffalo fur., local del.	15.50 to 16.00
Montreal, delivered	23.50
Valley, furnace	14.00 to 14.50

BESSEMER

Valley furnace	14.50 to 15.00
Pittsburgh, furnace	15.50
Pittsburgh, delivered	16.13 to 16.63

LOW PHOS.

Valley fur., standard	25.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	14.00
Pittsburgh district fur.	15.00
Pittsburgh, delivered	15.63 to 16.13

CHARCOAL

Lake Superior, del. Chicago	23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$18; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19.50; 15—$23 to $24.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents: 10—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Coke

Prices Per Net Ton

Beehive Ovens

Connellsville furnace	$2.00 to 2.25
Connellsville foundry	3.00 to 4.25
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.21 to 8.81
Chicago, ovens	7.00
New England, del.	10.00
St. Louis, del.	8.50
Birmingham, ovens	4.50
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens Connell., basis	5.50
Buffalo, ovens	7.50 to 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.50

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports	
Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	7.50
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.50 to 9.00
North African low phos.	7.50 to 8.50
Swedish basic, 65%	7.50 to 8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.00
Newfoundland fdy., 55%	8.00
Tungsten, spot, short ton unit, duty paid	$10.25 to 10.50
Chrome ore, 48% gross ton c.i.f.	$17.00 to 18.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	24 cents
South African, 52%	22 to 23 cents
South African, 49-51%	21 to 22 cents
South African, 44-47%	20 to 21 cents
Indian, 48-50% (nom.)	22 cents
Brazilian, 46-48% (nom.)	18 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$35.00
Missouri	35.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 30.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	$35.00
Joliet, Ill., East Chicago, Ind.	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$61.50

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$26.00
Pittsburgh, bessemer	26.00
Youngstown	26.00
Cleveland	26.00
Philadelphia	32.75
Chicago	28.00
Forging, Chicago	34.00 to 35.00
Forging, Pittsburgh	33.00
Forging, Philadelphia	38.75 to 39.75

SHEET BARS

Pittsburgh	26.00
Youngstown	26.00
Cleveland	26.00
Chicago	28.00

SLABS

Pittsburgh	26.00
Youngstown	26.00
Cleveland	26.00

WIRE RODS

Pittsburgh, Cleveland	$37.00
Chicago	36.00 to 38.00

SKELP

All grades, Pittsburgh	1.50c to 1.60c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$75.00
*Ferromanganese, del. Pittsburgh	80.24
Spiegeleisen, 19-20%, domestic fur. spot†	27.00
Ferrosilicon, 50 per cent, freight all., c. l.	77.50
Do, less carload	85.00
Do, 75 per cent	126.00 to 136.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(Spot prices, $5 a ton higher.)	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Do, for spot delivery	10.50
Ferrotungsten, stand., lb. cont.	1.00 to 1.10
Ferrovanadium, 30-40 per cent, per lb. contained, on analysis	3.05 to 3.30
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis; 18%, $2 unitage	68.00
Ferrophosphorus, electrolytic per ton carload, 23-26% f.o.b. Anniston, Ala.; 24%, $4.25 unitage	91.00
Ferromolybdenum, stand. 50-60 per cent. per lb.	0.95
Cal. Molybdate, lb. cont.	0.80
Molybdate, lb. cont.	.80

†Carloads. Differentials apply to quant.
*To users of carloads to 1000 tons annually. Differentials to large users.

Fluorspar

85 and 5 per cent grade

Washed gravel, domes., net ton del. Pitts. equiv.	$20.31
Washed gravel, import duty paid tide. gross ton	19.50

Pig Iron

June Shipments Expected by Lake Furnaces to Hold to May Levels—New Sales Are Light

PIG IRON PRICES, PAGE 53

Pittsburgh — Scattered inquiries for pig iron still attract considerable competition. Prices on all grades are maintaining their nominal character. Merchant interests still are awaiting the placing of an order for bessemer iron by a pipe producer near here. Prices of No. 2 foundry, bessemer and malleable at $15.50, district furnace, and $14.50 to $15 for basic are practically untested.

Boston—Continued light foundry operations and lower prices for Dutch iron depress the pig iron market. Sales are restricted to a few hundred tons in small lots. Dutch iron is being sold as low as $15, duty paid, dock. Prevailing factors operate to the disadvantage of Buffalo and outside iron and little is moving. The New England furnace price range is $16 to $17.

New York—Continued dullness prevails in pig iron. Worthington Pump & Machinery Corp., Harrison, N. J., is inquiring for 50 tons of foundry iron for Elmwood Place, O. A carload of Swedish charcoal iron arrived here recently from a German port. Buffalo foundry iron is $14 to $14.50, furnace; and eastern Pennsylvania iron, $13.50 to $14, furnace.

Philadelphia — The market is quiet. Basic is nominally easier at $14.50 to $15, delivered, eastern Pennsylvania. Eastern Pennsylvania foundry iron is $13.50 to $14, furnace.

Buffalo—June is opening at the same slow rate that prevailed in May. Eastern prices continue low. Only four furnaces are operating in this district, three being on basic. Nothing is moving by canal.

Youngstown, O.—Pig iron producers here note no improvement or loss in the volume of new business over the past several weeks. Valley furnace operating rates are unchanged. Bessemer, No. 2 foundry, and malleable are $14.50 to $15, valley; basic nominally $14 to $14.50; and No. 3 foundry and gray forge, $14.

Cleveland—Inquiry for pig iron is more active, featured by one lot of 1000 tons, and another for 500 tons. Sales for the week held at their recent average of approximately 3000 tons, for furnace interests with headquarters in Cleveland. While shipments in May were larger than in April, reversing the usual seasonal trend in pig iron, the outlook for June is not yet clear, though some makers expect their June shipments will equal those of May. The local market is dull and the price is nominal at $15.50, base, furnace; for outside shipment $14.50 is quoted.

Cincinnati—New demand for pig iron is light, and shipments on contracts are low. Prices are unchanged.

Chicago—Pig iron sellers hope to retain the slight gain noted in shipments during May. New business, however, is light and although inquiry recently has been more active, there is but slight disposition on the part of consumers to increase purchases. Foundry operations average around 20 per cent. Prices remain fairly steady, the $16 base price generally being paid on small lots of No. 2 foundry and malleable.

St. Louis—Leading buyers, such as stove, implement, machinery and heating apparatus manufacturers, report order books are the smallest ever known for this time of the year. The melt is at low stage, and this is reflected in current orders and shipments for pig iron. Prices are fairly steady.

Birmingham, Ala.—Slackening of small-lot buying is noted, and the aggregate is less than production, with three blast furnaces on foundry and one on basic. Quotations are unchanged. Consumption in this territory is at a low ebb.

Toronto, Ont.—Demand for pig iron showed some recovery during the week, reaching a total slightly over 500 tons. The Dominion Steel & Coal Co., Sydney, N. S., will blow in another blast furnace, having received an order for 15,000 tons of rails. The company will then have three stacks in operation.

Ferroalloys Sales Held To Small Lots

Ferroalloy Prices, Page 52

New York—Sales of ferroalloys continue quiet, with no indications of a seasonal improvement yet apparent. The combination of a Monday holiday and the turn of the month was not a factor for better inquiry. All ferroalloy prices are unchanged.

Chicago—Shipments of ferromanganese and spiegeleisen are keeping pace with the low rate of steelmaking operations. Demand is dull and unchanged in the spot market, with prices continuing $75, duty paid, for ferromanganese, and $27, furnace, for spiegeleisen. Occasional gains are noted in demand for special ferroalloys.

Bolt, Nut Third Quarter Prices Are Unchanged

Bolts, Nuts, Rivets Prices, Page 45

Chicago—Third quarter contracts for bolts, nuts and rivets will be issued shortly, with prices unchanged from recent quotations of 75 off for bolts and nuts, 2.35c for structural rivets, and 70, 10 and 5 for small rivets. Specifications are light, demand from the automotive industry being quieter than 30 days ago, while only small miscellaneous lots are being taken by farm implement builders. May business showed a moderate decline from April.

Pittsburgh — Bolt and nut producers have received a few inquiries for third quarter but probably will defer formal opening of books and price announcements until about June 10. Specifications continue at about the rate of the past 60 to 90 days, and prices are holding at 75 off for bolts and nuts and 2.25c for large rivets.

Cleveland—Except for demand for bolts and nuts from Ford Motor Co., which is tending to improve, the market is quieter. A number of jobbers are expected in before the end of June. No change in price is expected for third quarter; some makers say current prices will be quoted for that period when inquiries appear.

Ferroalloy Output Up in Canada; Iron, Ingots Off

Toronto, Ont.—Output of direct steel castings and ingots in Canada in April was 36,030 gross tons, 17 per cent under the 43,572 tons of March. In four months, total output of ingots and castings was 133,131 tons, against 331,037 tons a year ago.

April production of pig iron was 16,898 tons, compared with 17,989 tons in March. Production of ferroalloys in April, at 2185 tons, was the largest this year.

Two blast furnaces, one at Sault Ste. Marie and one at Hamilton, Ont., were in blast the entire month.

Scrap

Price Decline Continues as Buying Lags — Many Quotations Nominal—Melt Continues Light

Chicago — Scrap prices are weak, due to absence of buying, and several quotations are nominally lower. No new buying of heavy melting steel is noted following purchases a short time ago at $6.50, but forced sales of small lots are at low figures. Railroads continue to withhold old material, one western road recently having rejected bids on its list. Foundries are taking little cast scrap, and electric furnace grades also are inactive. Quotations on a number of grades remain to be tested.

Boston — Scrap buying has dropped almost to the vanishing point, with prices on some grades nominal, although there is an undercurrent of weakness, especially in cast grades. No. 1 wrought rail-

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	6.50	7.50
Boston, dealers	3.35	3.75
Buffalo, No. 1	7.00	7.25
Buffalo, No. 2		5.50
Chicago	6.00	6.25
Cleve., No. 1	6.75	7.00
Cleve., No. 2	6.50	6.75
Det., No. 1 deal.	5.00	5.50
Det., No. 2 deal.	3.00	3.50
E. Pa. del. mill	6.00	6.50
N. Y. deal, R. R.	4.00	4.50
N. Y. deal, No. 2	2.00	2.50
N. Y. deal. yd.	2.50	3.00
Pitts. No. 1	8.75	9.00
St. L. No. 1 sel.	6.25	6.75
Federal, Ill.	6.25	6.75
Granite City, Ill.	5.50	6.00
Valleys, No. 1	9.25	9.75

COMPRESSED SHEETS

Buffalo, dealers		5.50
Chi. (Factory)	5.25	5.50
Cleveland	6.75	7.00
Detroit, dealers	5.00	5.50
E. Pa. new mat.	5.00	5.50
Pittsburgh	8.50	9.00
Valleys	8.75	9.25

BUNDLED SHEETS

Buffalo	4.00	4.50
Cinci., deal.	5.00	5.50
Cleveland	6.00	6.50
Eastern, Pa.		5.00
Pittsburgh	7.75	8.25
St. Louis	1.50	2.00

SHEET CLIPPINGS LOOSE

Chicago	3.00	3.50
Cincinnati	2.50	3.00
Detroit, dealers	2.00	2.50
St. Louis	1.50	2.00

STEEL RAILS SHORT

Birmingham	11.00	11.50
Boston, dealers	4.00	4.50
Buffalo	9.00	9.50
Chicago (3 ft.)	7.50	8.00
Chicago (2 ft.)	8.00	8.50
Cinci., deal.	9.50	10.00
Detroit, deal.	8.00	9.00
Pitts. (open-hearth, 3 ft. and less)	10.50	11.00
St. Louis	11.00	11.50

STOVE PLATE

Birmingham	6.00	6.50
Boston, dealers	2.00	2.50
Buffalo	7.00	7.25
Chicago, net	5.00	5.50
Cinci., deal. net	3.25	3.75
Det., net deal.	2.50	3.00
Eastern Pa.		6.00
N. Y., deal. mill	2.50	3.00
St. Louis	6.00	6.50

COUPLERS, SPRINGS

Buffalo	9.50	10.00
Chicago	7.00	7.50
Eastern Pa.	7.50	8.00
Pittsburgh	9.75	10.25
St. Louis	8.00	8.50

ANGLE BARS—STEEL

Chicago	7.00	7.50
St. Louis	7.00	7.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	9.00	9.50
Cleveland bil. and bloom crops	9.00	10.00
Eastern Pa.	9.00	10.00
Pittsburgh billet bloom crops	13.00	13.50
Pitts., sheet bar crops	11.50	12.00

FROGS, SWITCHES

Chicago	6.00	6.25
St. Louis	7.00	7.50

SHOVELING STEEL

Chicago	6.00	6.25
Cleveland	6.25	6.50
St. Louis	6.25	6.75

RAILROAD WROUGHT

Birmingham	6.00	7.00
Boston, dealers	3.00	3.50
Buffalo, No. 1	4.75	5.25
Buffalo, No. 2	7.00	7.25
Chicago, No. 1	5.00	5.60
Chicago, No. 2	6.00	6.25
Cinci., No. 2	5.50	6.00
Eastern, Pa.	7.50	8.00
N. Y., No. 1, deal.	2.50	3.00
Pitts., No. 2	9.00	10.00
St. Louis, No. 1	4.50	5.00
St. Louis, No. 2	6.25	6.75

SPECIFICATION PIPE

Boston	4.00	4.25
Eastern Pa.	8.00	8.50
N. Y., deal.	2.50	3.00

BUSHELING

Buffalo, No. 1		5.50
Chicago, No. 1	4.50	5.00
Cinn., No. 1 dl.	4.50	5.00
Cinn., No. 2	3.00	3.50
Cleve., No. 2	4.00	4.25
Det., No. 1 new deal.	3.50	4.00
St. L., No. 1	3.50	4.00
Val. new No. 1	8.25	8.75

MACHINE TURNINGS

Birmingham	3.50	4.00
Boston, dealers	0.50	1.00
Buffalo	4.25	4.50
Chicago	3.00	3.50
Cin., deal	3.25	3.75
Cleveland	3.50	4.00
Detroit	2.00	2.50
Eastern, Pa.	3.50	4.00
N. Y., deal	1.35	1.50
Pittsburgh		6.00
St. Louis	1.50	2.00
Valleys	6.50	7.00

BORINGS AND TURNINGS For Blast Furnace Use

Boston, dealers	.60	.75
Buffalo	4.75	5.25
Cinn., deal.	3.25	3.75
Cleveland	4.00	4.50
Detroit, deal.	2.75	3.25
Eastern Pa.	3.00	3.50
N. Y., deal	1.35	1.50
Pittsburgh		6.00

CAST IRON BORINGS

Birming., chem.	12.50	13.00
Birming., plain	3.50	4.00
Boston, chem.	5.00	5.50
Boston, dealers	1.00	1.25
Buffalo	4.75	5.25
Chicago	3.50	3.75
Cinn., deal.	3.25	3.75
Cleveland	4.00	4.50
Detroit, deal.	2.75	3.25
Eastern Pa.	3.00	3.50
E. Pa., chem.	8.00	10.50
N. Y., deal.	1.50	2.00
Pittsburgh		6.00
St. Louis	4.00	4.50

PIPE AND FLUES

Cinn., deal.	3.50	4.00

RAILROAD GRATE BARS

Buffalo	4.75	5.25
Chicago, net	4.75	5.25
Cincinnati	4.25	4.75
Eastern Pa.		6.00
N. Y., deal.	3.50	4.00
St. Louis	5.25	5.75

FORGE FLASHINGS

Boston, dealers	2.50	3.00
Buffalo	4.50	5.00
Cleve. ov. 10 in.	7.00	7.50
Detroit	3.50	4.00

FORGE SCRAP

Boston, dealers	2.00	2.25
Chicago	7.50	8.00
Eastern Pa., del.	5.00	5.50

ARCH BARS, TRANSOMS

Chicago, net	5.00	5.50
St. Louis	6.50	7.00

AXLE TURNINGS

Boston, deal.	6.00	6.50
Buffalo	6.50	7.00
Chi., elec. fce.	5.00	5.50
Cleveland	6.50	6.75
Eastern Pa., del.		6.00
Pittsburgh, O. H.	7.50	8.00
St. Louis	5.00	5.50

STEEL CAR AXLES

Birmingham	10.50	11.00
Boston, ship. pt.	8.25	8.75
Buffalo	10.00	10.50
Chicago	9.50	10.10
Eastern Pa.	14.50	15.00
St. Louis	10.50	11.00

SHAFTING

Boston, ship, pt.	8.50	9.00
N. Y., deal.	6.50	7.00
St. Louis	8.50	9.00
E. Penna.	13.00	14.00

CAR WHEELS

Birming. iron	8.00	8.50
Boston, iron	8.50	9.00
Buffalo, iron	8.00	8.50
Buffalo, steel	8.50	9.00
Chicago, iron	6.25	6.75
Chi., rolled steel	6.75	7.25
Cincinnati iron	7.50	8.00
E. Pa. steel	7.50	8.00
E. Pa. iron	9.00	9.50
Pitts. iron	9.50	10.00
Pitts., steel	9.75	10.25
St. Louis, iron	5.50	6.00
St. Louis, steel	6.50	7.00

NO. 1 CAST SCRAP

Birmingham	7.00	8.00
Buffalo (Mach.)	9.00	9.50
Buffalo, cupola	8.00	8.50
Boston, textile	7.50	8.00
Chicago, mach.	6.70	7.25
Chi., railroad	5.90	6.45
Chicago, agri.	5.60	6.15
Cinn., mach. cup.	7.50	8.00
Cleve. cupola	7.00	7.50
Det., net deal.	7.00	7.50
E. Pa. cupola		9.00
N. Y. cup. deal.	6.00	6.50
N. Y., del. local foundries	7.50	8.00
Pitts., cupola	9.00	9.50
San Fran., del.	13.50	14.00
Seattle	5.00	7.50
St. L. No. 1 ma.	7.00	7.50
St. L., No. 1	6.50	7.00

HEAVY CAST

Boston, del.	3.00	3.50
Bost., mach. cast	7.00	7.50
Buffalo, break	5.50	6.00
Cleve., break	3.50	4.00
Detroit, auto, net deal.	8.50	9.00
Det., break., dl.	4.00	4.50
Eastern Pa.	8.00	8.50
N. Y. No. 1, dl.	4.00	4.25
N. Y. break, dl.	4.50	4.75
Pittsburgh	7.75	8.25

MALLEABLE

Boston Consum.	8.00	8.50
Buffalo	8.00	8.50
Chicago, agri.	5.50	6.00
Chicago, R. R.	6.50	7.00
Cinci., R. R. del.	8.00	8.50
Cinci., agri. del.	7.75	8.25
Cleveland, rail	7.50	8.00
Det. auto deal.	6.00	7.00
St. Louis, rail	5.50	6.00

RAILS FOR ROLLING 5 feet and over

Birmingham	9.00	9.50
Boston, deal.	5.50	6.00
Buffalo	7.00	7.50
Chicago	8.00	8.25
Eastern Pa.		9.50
New York	4.25	4.75
St. Louis	8.50	9.00

LOCOMOTIVE TIRES

Chicago, cut	7.50	8.00
St. L., No. 1	6.00	6.50

LOW PHOS. PUNCHINGS

Chicago	7.50	8.00
Buffalo	9.00	9.50
Eastern Pa.	9.50	10.00
Pittsburgh	10.50	11.00

road is down, while No. 1 steel is $5, Worcester, and bundled skeleton $3.75, little moving. Textile and short rails for New England consumption are weak, as low as $6.50, delivered, being noted for textile.

New York—Scrap shipments are small and few. Cast for New Jersey pipe foundries is off 50 cents to $7.50, delivered. Little No. 1 steel is being bought for barge at $4.50 while movement of this grade by rail is absent. Further weakness has developed in most other grades, although prices are practically nominal in the absence of business.

Philadelphia—Railroad grate bars and stove plate have been marked down to $6, delivered. Demand is listless.

Buffalo—Good sized deliveries of No. 2 heavy melting steel continue to plants here. These are entirely on contracts, no new business being reported. Turnings and borings are lower in small lot sales. Other prices are unchanged in an inactive market.

Pittsburgh — On several sales of heavy melting steel last week for the same consumer $9.25 a ton was paid, reducing the spread by 50 cents and is now quotable at $8.75 to $9.00. In sympathy, revisions have been effected in many other grades, although sales of the last week have been confined to small lots. A round tonnage sale of scrap rails reaffirmed the $9 to $9.50 spread. Machine shop turnings and borings and turnings for blast furnace use, though lacking a sizable sale, are somewhat weaker. There appears considerable basis for opinion at present that a nearby steel mill will close on the 6550 tons of No. 1 heavy melting steel offered by the Pennsylvania railroad June 1. The Baltimore & Ohio railroad's monthly list is being closed June 6 and involves about 5000 tons of various scrap items. Included are 1600 tons of scrap rails, 1000 tons of heavy melting steel and 500 tons of steel car axles.

Cleveland—Shipments of steel and iron scrap are confined to carloads and the total is small. Prices have not been affected by recent distribution of a fairly large tonnage of heavy steel at Pittsburgh. Tracks of the Akron, Bedford & Cleveland division of the Northern Ohio Traction & Light Co., some 54 miles, has been bought by Briggs & Turivas, Chicago, who will scrap the material.

Detroit—While heavy melting steel and compressed sheets remain unchanged at $5 to $5.50, slight adjustments have been made in loose sheet clippings, No. 1 busheling, borings and turnings, cast iron borings, heavy auto cast and automobile malleable. Less scrap is coming out, keeping step with diminished demand.

Cincinnati—Principal consumers are virtually out of the market for iron and steel scrap but continue to accept restricted shipments on contract. Heavy melting steel is quotable at $5.50 to $6, although all grades are without test.

St. Louis — In the absence of trading, iron and steel scrap prices are largely nominal. The trend is downward, however and some cuts in quotations have been made to adjust more closely to actual values. Selected heavy melting steel was reduced 50 cents a ton to a minimum of $6.25 and other grades of this material were also lowered that amount. Locomotive tires were marked down $2 per ton to $6, and fractional cuts were made in rails for rolling, iron car wheels and some other items.

Birmingham, Ala. — Practically nothing is doing in the scrap market. Consumers of heavy melting steel appear to be in no position to take on stock and are offering their own quotations on current needs.

Toronto, Ont.—With no new developments, iron and steel scrap continues dull. Some demand is reported for iron grades, with machinery cast holding the lead, while steel scrap is at a standstill. Dealers are out of the market and prices are unchanged.

Canadian Scrap

Dealers' Buying Prices

Per Gross Ton

MONTREAL

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Coke

Connellsville Furnace Grades Are Easier—Foundry Fuel Prices Adjusted in Middle West

COKE PRICES, PAGE 53

Pittsburgh — Coke producers are finding little encouragement in the market. Occasional carloads of foundry coke are shipped for immediate needs. By-product ovens at several nearby steel plants are being shut down. Shipments by one coke interest in May were larger than in April, but on the average the trend was the reverse of this. Prices are irregular, with $2 to $2.25 for furnace coke and $3.00 to $4.25 for foundry coke, nominally unchanged.

New York—Beehive furnace coke continues quiet at $2 to $2.25, Connellsville; and beehive foundry coke, $3 to $3.25, Connellsville, for ordinary brands. Premium foundry brands appear easier at $4 to $4.25, Latrobe, Pa. By-product coke prices are $8.21 to $8.81, delivered, Newark, N. J.; $10, New England; and $8.50, Philadelphia.

Cincinnati—The wholesale price of domestic coke is up 25 cents, to $4.80, delivered Cincinnati, with a fair increase in orders in anticipation of the increase. The Dayton, O., price is up 25 cents, to $5.33. Dealers here report by-product, foundry coke off 50 cents at St. Louis, in accordance with the new Chicago quotation. The maket here is dull.

Chicago—Shipments of by-product foundry coke are unimproved, operations of most foundries continuing at a low rate. The only recent change in the foundry melt has been a slight gain in schedules of malleable foundries in the nearby district. The market continues $7, ovens, following the recent 50-cent reduction.

St. Louis—No improvement is noted in demand for metallurgical coke, May having marked the low point since the beginning of the depression. Contracting, which usually begins early in June, shows little life, and indications point to the smallest volume in recent years.

Birmingham, Ala.—Coke prices are weak as demand continues slow. Not more than 500 out of 1390 ovens at by-product plants in this district are in operation. Requirements here are lighter than in many months.

Nonferrous Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 5.75c, Conn., for copper

Sheets	
Yellow brass (high)	12.00
Copper, hot rolled	15.12½
Lead sheets, cut, to jobbers	6.50
Zinc sheet (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	15.25
Seamless copper	14.37½
Rods	
Yellow brass (high, full turnings)	9.75
Naval brass	10.87½
Anodes	
Copper untrimmed	11.75
Wire	
Yellow brass (high)	12.00

Old Metals

Dealers' buying prices, cents lb.

No. 1 Composition Red Brass	
New York	2.75 to 2.87½
Chicago	2.00 to 2.25
Cleveland	2.25 to 2.50
St. Louis	2.75
Heavy Yellow Brass	
New York	1.75 to 1.87½
Heavy Copper and Wire	
New York	3.62½ to 3.87½
Chicago	2.62½ to 2.87½
Cleveland	2.25 to 2.75
St. Louis	3.00
Composition Brass Borings	
New York	2.25 to 2.50
Yellow Brass Tubing	
Cleveland	1.25 to 1.50
Light Copper	
New York	2.75 to 3.00
Chicago	2.12½ to 2.37½
Cleveland	2.00 to 2.25
St. Louis	2.75
Light Brass	
Chicago	1.12½ to 1.25
Cleveland	1.00 to 1.25
St. Louis	1.50
Lead	
St. Louis	2.00
Zinc	
New York	0.75 to 1.00
Cleveland	0.87½ to 1.00
St. Louis	1.00
Aluminum	
Clippings, new, soft, Cleve.	9.00 to 9.50
Clippings, hard, Cleveland	6.50 to 7.00
Borings, Cleveland	2.50 to 3.00
Mixed cast, Cleveland	3.00 to 3.50
Mixed cast, St. Louis	3.00 to 3.50

Secondary Metals

Remelt, aluminum No. 12	8.00 to 9.00
Brass ingots, 85-5-5-5	6.00

Metals

Demand Still Dull Although Prices Hold Fairly Steady—Copper Tariff More Certain

New York—Quotations held fairly steady on the metals last week but demand still was dull.

Copper—Electrolytic metal was available from at least one custom smelter at 5.25c, Connecticut, for delivery into the third quarter but most interests held to 5.37½c. The large mine producers remained out of the market at the nominal quotation of 5.75c to 6.00c. Little business was booked either for domestic or export shipment. Interest continued to be centered in the copper tariff. The 4-cent levy was retained in the tax bill which passed the Senate and which also met the acceptance of the joint house and senate committee. Little doubt now remains that the measure will become law. Brass and copper products remained unchanged as did brass ingots. Old metals were dull.

Lead—Purchasing was in lighter volume last week but the tone of the market remained steady. Business was mostly in carlots for spot and nearby delivery.

Zinc—Some easiness was apparent in prime western zinc with some metal available at 2.80c, East St. Louis. However, most sellers held to 2.85c. Projected curtailment of activity in the Tri-State ore field supported the market.

Tin—The market was dull, with quotations fluctuating from day to day largely in line with prices on the London metal exchange. Bolivia has accepted a plan to further reduce output and other leading countries are expected to follow. World supplies of tin, including carryover at Straits Settlements, declined 1423 tons last month to 59,424 tons.

Antimony—Quotations remained unchanged, but interest of consumers was negligible.

Aluminum—Purchasing was light, with quotations unchanged.

Quicksilver Unchanged

New York—The quicksilver market remains dull, with prices largely nominal and unchanged. Small lots are quoted $65 to $66 a virgin flask of 76 pounds, while round lots may be had at about $1 less. The European quicksilver cartel has lowered its price to a basis of $50 a flask, c.i.f. European ports.

Toluol Demand Is Heavier For Automobile Finishes

New York—While a shortage in toluol exists in some quarters, due to low output, the situation is not acute and prices are unchanged, although firm. Demand is slightly heavier for automobile finishes. Benzol is more irregular, buyers taking small lots and in some instances paying slightly above the quoted market. Phenol is dull and unchanged, minimum for larger drums being 15.3c per pound. Naphthalene is steady with volume holding well, although some slowing up in shipments to certain consumers is noted. Sulphate of ammonia is easy.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26
Per Pound at Producers' Plants	
Phenol	0.153 to 0.173
Per Pound at Producers' Plants in	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.00

Nonferrous Metal Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
May 28	5.37½	5.87½	5.12½	20.75	21.05	3.00	2.90	2.85	22.90	5.12½	35.00
May 30—Holiday											
May 31	5.30	5.87½	5.05	20.35	20.65	3.00	2.90	2.85	22.90	5.12½	35.00
June 1	5.25	5.87½	5.00	20.70	21.15	3.00	2.90	2.85	22.90	5.12½	35.00
June 2	5.25	5.87½	5.00	20.45	20.90	3.00	2.90	2.85	22.90	5.12½	35.00
June 3	5.25	5.87½	5.00	20.55	21.00	3.00	2.90	2.82½	22.90	5.12½	35.00

Pacific Coast

Public Work Makes Most Tonnage—Highways and Hydroelectric Development Lead in Activity—Reinforcing Bar Sales Exceed Same Period of Last Year—Pipe Lettings Small

Seattle—Pacific Northwest steel markets show no increased activity, although several projects have developed. Difficulty in marketing municipal bonds is a serious deterrent to public works construction. Seattle has postponed action on more than $3,000,000 improvements in the hope the projects can be financed through the Reconstruction Finance Corp. This includes the Diablo power house and equipment, the local waterfront seawall and a concrete bridge in Seattle. Highway projects are active in this state and Oregon, public works awards in the Northwest last week totaling $3,000,000.

The only steel award of the week over 100 tons went to the Pacific Coast Steel Corp., Seattle, 215 tons of reinforcing steel for the state Stillaguamish river bridge, Silvana, Wash. Isaacson Iron Works, Seattle, took a small award for structurals for the Port Townsend, Wash., Masonic temple. Two bridge projects, involving about 1300 tons of shapes, have assumed definite status. King county, Washington, will open bids June 27 for the Green river bridge, involving 700 tons of structurals and 77 tons of reinforcing.

Private Work Held Back

San Francisco—(*By Air Mail*)—Little private work is up for figures, most projects being government, state and county work. Featuring awards is 2500 tons of reinforcing steel bars for the Pine Canyon dam, Pasadena, Calif. Bids are to be called for shortly for about 4000 tons of concrete bars for San Gabriel dam No. 1 for Los Angeles county.

Awards of reinforcing steel bars were the largest for any week so far this year and aggregated 3409 tons, bringing the total for the year to 26,533 tons, compared with 25,749 tons for the same period last year. This is the first time that total bookings for 1932 have exceeded those for the corresponding period in 1931. Pacific Coast Steel Corp. has booked 100 tons for baseball bleachers in Berkeley, Calif., for the university of California.

Plate awards were confined to lots of less than 100 tons. Interest is centered around the opening of bids June 15 for 60,000 tons for tunnel outlets for the Hoover Dam project. Upland, Calif., is taking bids for 100 tons for a welded steel pipe line. Prices are general at 1.90c, c. i. f.

Moore Drydock Co. booked 726 tons for the H Street bridge, Sacramento, Calif., 275 tons for the Garwood Ferry bridge, Stockton, Calif., and 146 tons for five bridges for Monterey county, Calif. McClintic-Marshall Corp. secured 100 tons for a telephone building in Monterey, Calif. Bids have been opened on from 800 to 1000 tons for buildings for the Dairy Delivery Co., San Francisco, and on 275 tons for the St. Joseph hospital, Pasadena, Calif.

Cast iron pipe lettings were confined to small lots. Oakland, Calif., has opened bids on 896 tons. Marin municipal water district, San Rafael, Calif., will open bids June 2 for 1100 tons of 10 and 12-inch pipe. Long Beach, Calif., opened bids June 1 for 400 tons of ¾ to 8-inch wrought steel pipe. New warehouse prices on cold-rolled material will be named shortly in San Francisco. No. 24 gage galvanized and No. 24 gage hot-rolled have been advanced from 4.35c to 4.55c and from 3.95c to 4.05c, respectively.

Steel in Europe

Markets Dull but Pig Iron Output Is Being Increased

London—(*By Radio*)—Markets in Great Britain continue dull and without feature. Gjers, Mills & Co. Ltd., Middlesbrough, will restart two hematite furnaces in anticipation of an expansion in demand for pig iron. The Continent continues to undercut British makers but British pig iron producers claim the advantages of the higher tariff. Canada is buying steel sheets from Scottish makers.

Reports from Continental centers are featureless but Brussels finds structural steel presents the most active and profitable market.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, June 2

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
		£ s d		£ s d £ s d
PIG IRON				
Foundry, 2.50-3.00 Silicon	$10.82	2 18 6	$ 8.75 to $ 9.23	1 16 0 to 1 18 0
Basic bessemer	10.36	2 16 0*	7.41 to 7.90	1 10 6 to 1 12 6
Hematite, Phos. .03-.05	11.84	3 4 0	.....	.....
SEMIFINISHED STEEL				
Billets	$19.89	5 7 6	$9.48	1 19 0
Wire rods, No. 5 gage	27.75	7 10 0	21.87	4 10 0
FINISHED STEEL				
Standard rails	$30.53	8 5 0	$28.55	5 17 6
Merchant bars	1.05c	6 7 6	.48c to .50c	2 4 0 to 2 5 0
Structural shapes	1.22c	7 7 6	.46c to .47c	2 2 0 to 2 3 0
Plates, †¼ in. or 5 mm	1.44c	8 15 0	.59c to .61c	2 14 0 to 2 15 0
Sheets, black, 24 gage or 0.5 mm.	1.32c	8 0 0	1.20c to 1.21c	5 9 0 to 5 10 0
Sheets, gal., 24 gage, corr.	1.73c	10 10 0	1.51c	6 17 6
Bands and strips	1.32c	8 0 0	.72c to .74c	3 5 0 to 3 7 6
Plain wire, base	1.57c	9 10 0	1.18c	5 7 6
Galvanized wire, base	1.90c	11 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.82c	11 0 0	1.21c	5 10 0
Tin plate, box 108 lbs.	$ 2.78	0 15 0	$3.20	0 13 2

British ferromanganese $72 to $75 delivered Atlantic seaboard, duty paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

		£ s d	French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$10.82	2 18 6	$ 8.69	220(2)	$ 9.10	325	$16.34	69
Basic bessemer pig iron	10.36	2 16 0*	7.90	200(1)	8.12	290	17.88	75.50
Furnace coke	2.45	0 13 3	4.90	124	4.48	160	4.55	19.20
Billets	20.55	5 10 0	14.62	370	10.50	375	22.85	96.50
Standard rails	1.38c	8 7 6	1.41c	785	1.57c	1,210	1.36c	127
Merchant bars	1.09c	6 12 6	.95c	530	.55c	420	1.18c	110
Structural shapes	1.44c	8 15 0	.99c	550	.55c	420	1.15c	107.50
Plates, †¼-in. or 5 mm.	1.49c	9 0 0	1.17c	650	.70c	535	1.36c	127
Sheets, black	1.36c	8 5 0§	1.44c	800‡	.88c	675‡	1.54c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm	1.57c	9 10 0	2.70c	1,500	1.78c	1,370	3.96c	370
Plain wire	1.40c	8 10 0	2.03c	1,130	1.95c	1,500	1.90c	178
Bands and strips	1.57c	9 10 0	.99c	550	.88c	675	1.36c	127

*Basic. †British ship-plates, Continental, bridge plates. §24 ga. ‡1 to 3 mm. basis price.
British quotations are for basic open-hearth steel, Continental usually for basic-bessemer steel.

Machinery

MODERATE improvement in government inquiry, largely for machines and equipment to be installed at various naval and aircraft stations, is about the only favorable factor in the machinery market. With heavy pressure for governmental economy being exerted it is problematical how long buying will continue from this source. An automobile body builder bought 12 presses recently. A contemplated $200,000,000 expenditure by the radio industry for new machinery, dies, retooling, materials, labor, etc., should provide a needed stimulus some time before 1933. Overhead crane business in April declined slightly.

New York—A moderate spurt in government inquiry, a $175,000 order for presses and bids on a small list of tools for a state school at Walkill, N. Y. feature the equipment market. General inquiry and buying, however, shows little improvement. Briggs Mfg. Co., Detroit, bought 12 presses, six heavy-duty type going to the Toledo Machine & Tool Co. and six lighter presses to be built by E. W. Bliss Co., Brooklyn.

The navy department closes this week on four milling machines, and June 14 on four 14-inch engine lathes for New York and San Francisco; selective head engine lathe for Mare Island, June 14, and four sensitive drills for various points, June 21. The Walkill school inquiry includes six machines, among them a lathe, drill and milling machine. Equipment will also be required for the boys' training school at Warwick, N. Y., bids to be taken soon.

Worcester, Mass.—Demand for machine equipment continues dull. Sales are limited to individual units with inquiry light. Machine building plants with few exceptions are operating on reduced schedules with skeleton forces. Several New England builders are figuring on heavier government lists, but are doing little with private industry. Improvement of a pronounced and lasting type is not expected until general manufacturing schedules gain. Textile machine builders are quiet.

Pittsburgh — Equipment and machine tool demand continues to be noticeably lacking and the present absence of orders is in large part due to customer finances. Sentiment in the market continues to be depressed. On such casual ordering as is going on at present used machinery is making inroads on new equipment.

Cleveland—Outlook in the machinery and equipment field continues depressed. Buyers are contracting only for absolute necessities and in nearly all cases are stripping idle machines for replacement parts. Sales totals for May generally registered new lows and it is not thought that June business will show much improvement from this situation.

Wright Field, Dayton, O., is opening bids June 8 and 13 on 39 machine tools, the list on the former date including nine tool and cutter grinders, six lathes, two woodworking shapers, mortisers and surfacers. On the latter date bids will close on 15 toolroom 13-inch precision lathes. This government business is holding in fair volume, although federal economy programs may put a serious crimp in future bookings.

Chicago — Conditions in the market for machine tools and equipment are unchanged. Orders are being placed sparingly and usually only when equipment is urgently needed. The desire on the part of users to curtail expenditures is creating relatively heavy interest in used equipment, but although there is a fairly large supply of old tools sales remain light. Sellers of practically all types of plant equipment have an accumulation of inquiries that have been pending over a number of months and on which action has been deferred.

According to the president of the Radio Manufacturers' association, which met here recently, the radio industry is preparing to spend $200,000,000, largely for new machinery, dies and retooling, in anticipation of sales of radio sets and tubes in 1933.

Further Decline in Overhead Crane Orders

New York—New orders and unfilled business slumped in April, according to the monthly report of the Overhead Electric Crane institute. Shipments covered 14 units with a tonnage capacity of 98¼, valued at $45,992. This compares with 13 cranes shipped in March with a tonnage capacity of 65¾, valued at $36,768.

New orders slumped to eight units with a tonnage capacity of 90½, valued at $31,325. This compares with 16 cranes booked in March with a tonnage capacity of 88¾, valued at $51,941.

Unfilled orders May 1 included 34 cranes, tonnage capacity, 867 and valued at $396,620. On April 1, unfilled bookings covered 40 cranes, tonnage capacity 874¾, valued at $411,287.

Plan Grinding Symposium

A grinding symposium will be one of the chief features of the National process meeting to be held at Hotel Statler, Buffalo, June 6-7, under auspices of the American Society of Mechanical Engineers.

Exports of Metalworking Machinery

	April		Four Months Ending April	
	1932	1931	1932	1931
Engine lathes	13	44	50	197
Turret lathes	3	12	22	87
Other lathes	6	74	59	251
Vertical boring mills and chucking machines	3	32	20	95
Thread-cutting and automatic screw machines	12	19	42	78
Knee and column type milling machines	8	26	21	60
Other milling machines	12	28	50	108
Gear-cutting machines	9	30	32	91
Vertical drilling machines	10	17	29	124
Radial drilling machines	....	28	1	54
Other drilling machines	86	72	145	733
Planers and shapers	7	26	46	118
Surface grinding machines	4	17	35	50
External cylindrical grinding machines	7	16	44	91
Internal grinding machines	6	2	30	107
Tool grinding, cutter grinding, and universal grinding machines	32	81	131	334
Pneumatic portable tools	444	1101	1862	3954
Chucks for machine tools	378	714	1906	3364

American QUALITY Steel & Wire Company

WIRE for Manufacturing

Experience Has No Substitute

Steel wire—the most highly finished product of the steelmaker's art—naturally demands the most of material and workmanship. It is significant that as progress multiplies the uses of this product, the demand for American Quality Wire in carbon steels and alloys keeps pace with it proving there is no substitute for the experience of more than a century, and demonstrating the attitude that this company takes toward every wire requirement.

1831 — MORE THAN 100 YEARS of PROGRESS in WIRE MAKING — 1932

AMERICAN STEEL & WIRE COMPANY

208 South LaSalle Street, Chicago

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

And All Principal Cities

Pacific Coast Distributors. Columbia Steel Company, Russ Building, San Francisco

Export Distributors: United States Steel Products Company, New York

"...another car of wire the same as the last!"

And it is important that the wire *be the same.*

The possible saving of a few cents per hundred on a substitute wire may look good to the purchasing department, but if that few cents spells lack of uniformity, the saving is quickly absorbed in the shop by machines shut down for adjustment, spoiled tools or rejected product.

Many years' experience as manufacturers of quality wires and wire products has taught the Wickwire Spencer Organization the importance of uniformity. While Wissco Wire costs no more than other quality wires, the endless tests both physical and chemical, as well as microscopic examination to which every bundle of Wissco Wire is subjected, insures uniformity for the user.

Now is not the time to indulge in costly economies. Buy your wire from a dependable source of supply. Make your manufacturing saving from higher speed operation to be had only by using uniform wire. Be sure the next shipment is just like the last one.

•

Wickwire Spencer Steel Company, 41 East 42nd Street, New York City; Buffalo, Chicago, Detroit, Philadelphia, Tulsa, Worcester; Pacific Coast Headquarters: San Francisco; Warehouses: Los Angeles, Portland, Seattle. Export Sales Department: New York City.

WISSCO WIRE

by Wickwire Spencer

Wickwire Spencer manufactures High and Low Carbon Wires—in various tempers, grades and finishes—for your specific purpose. Hard-Drawn, soft, or annealed Basic or Bessemer Wires—Hard-Drawn annealed, or oil-tempered Spring Wire, Chrome Vanadium Spring Wires—Valve Spring — Music — Clip — Pin — Hairpin — Hook and Eye — Broom — Stapling — Bookbinding — Machinery Spring Wire — Reed Wire — Clock — Pinion — Needle-Bar — Screw Stock — Armature Binding — Brush — Card — Florist —Mattress—Shaped—Rope—Welding. Flat Wire and Strip Steel, High or Low Carbon—Hard, annealed or tempered—Clock Spring Steel—Corrosion and Heat Resisting Wires. Consult the Wissco technical man on your wire problems, however large or small.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk	Gal.	In.	Blk.	Gal.
⅛	58	41½	½	25	7
¾	62	50½	¾	30	13
1—3	64	52½	1—1¼	33	17
			1½—2	37	20

LAP WELD

2	57	45½	2	25	11
2½—6	61	49½	2½—3½	30	15
7—8	58	45½	4—6	32	19
9—10	56	43½	7—8	31	18
11—12	55	42½	9—12	28	13

BUTT WELD

Extra strong, plain ends

⅛	55	44½	¼ & ⅜	+11	+46
¾	60	49½	½	25	9
1—1½	62	51½	¾	30	14
2—3	63	52½	1—2	36	20

LAP WELD

Extra strong, plain ends

2	55	44½	2	31	15
2½—4	59	48½	2½—4	36	22
4½—6	58	47½	4½—6	35	21
7—8	54	41½	7—8	33	19
9—10	47	34½	9—12	23	10
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload discounts, f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½ 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir. ....$32.00 to 33.00
Four-inch, Birmingham .... 36.00 to 37.00
Four-inch, Chicago ..... 38.40 to 42.40
Six to 24-inch, Chicago..... 34.40 to 38.40
Six-inch and over, N. Y..... 28.00 to 30.00
Four-inch, New York ..... 34.50 to 36.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore	2.75c
Boston	3.25c
Buffalo	3.00c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.65c
Los. Ang.	2.35c
New York‡(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.60c
Portland	2.75c
San Fran.	2.35c
Seattle	2.75c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	2.75c
Boston	3.25c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.45c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.35c-3.00c
Boston	3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los. Ang. cl.	1.90c
Los Ang., lcl	2.20c
New York	2.65c-3.10c
Phila.	2.26½c
Pittsburgh	2.60c
San Fran. cl.	2.60c
San Fran. lcl	2.80c
Seattle	3.00c
St Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore	2.75c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los. Ang.	2.35c
New York(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.85c
Portland	2.75c
San Fran.	2.35c
Seattle	2.75c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

PLATES

Baltimore	2.75c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	2.35c
New York(d)	3.30c
Philadelphia	2.45c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	2.75c
San Fran.	2.35c
Seattle	2.75c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.50c
Buffalo	3.50c
Chattanooga	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.35c
Los Ang.	3.50c
N. Y.	3.00c
Portland	3.75c
Phila.*† (e)	2.90c
Pitts.**	3.00c
San Fran.	3.50c
Seattle	3.75c
St. Louis	3.45c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.20c
Buffalo	4.10c
Chattanooga	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.25c
Detroit	3.50c
Los Ang.	4.05c
New York	3.75c-4.00c
Phila.*†(e)	3.40c
Pitts.**	3.40c
Portland	4.25c
San Fran.	4.05c
Seattle	4.25c
St. Louis	3.80c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	4.75c
Buffalo	4.35c
Chattanooga	3.95c
Chicago	4.10c
Cincinnati	4.25c
Cleveland	3.75c
Detroit	4.00c
Houston	4.25c
Los. Ang.	4.35c
New York	4.00c-4.10c
Phila.*†(e)	3.75c
Pitts.**	3.90c
Portland	4.75c
San. Fran.	4.55c
Seattle	4.75c
St. Louis	4.35c
St. Paul	4.19c
Tulsa	5.10c

BANDS

Baltimore	3.25c
Boston	3.75c
Buffalo	3.35c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia	2.75c
Pittsburgh	2.95c
Portland	3.25c
San Fran.	3.75c
Seattle	3.25c
St. Paul	3.20c
Tulsa	3.45c

HOOPS

Baltimore	3.25c
Boston	4.90c-5.40c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia	3.00c
Pittsburgh	3.60c
Seattle	4.75c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.65c
Chicago	2.95c
Cincinnati	3.29c
Cleveland	2.95c
Detroit	3.17c
Los Ang. (a)	4.50c
New York	3.30c
Philadelphia*	3.30c
Pittsburgh	2.95c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.20c
St. Louis	3.35c
Tulsa	4.65c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.25c
Chicago (soft) (b)	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b) Net base straightening, cutting, boxing 1 ton or more.

(c) Plus mill, size and quantity extras.

(d) Minus quant. diff.

(e) New mill classif.

‡Domestic bars.

*Plus quan. extras.

**Less than 25 sheets.

*†50 or more bundles.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

BOSTON—Murphy Plating Co., 384 Atlantic avenue, John P. Murphy owner, is starting in business as nickel and chrome plater.

LYNN, MASS.—Perfect Burner Co., 294 Broad street, has been organized to manufacture range oil burners and furnace burners. It is capitalized for $35,000. J. G. Redshaw is president, Hamilton P. Edwards treasurer.

New York

NEW YORK—Dreier Iron & Steel Corp. has been incorporated with 100 shares no par value, by A. J. Halprin, 170 Broadway.

NEW YORK—Colonial Wrought Iron Products Co. has been incorporated with $20,000 capital, by I. Levine, 363 Seventh avenue.

NEW YORK—Empire Tool Works has been incorporated with 100 shares no par value, by C. R. Williams, 256 Broadway.

New Jersey

BAYONNE—Hartol Products Co., 117 Liberty street, New York, will take bids in August for a bulk storage plant and tanks at Bergen Point, to cost $40,000.

NEWARK—Excel Metal Corp. has been incorporated with $100,000 capital, by Max A. Ern, 24 Commerce street, Newark.

PERTH AMBOY—Raritan Copper Works, Elm and Market streets, plans rebuilding of plant recently destroyed by explosion, at cost of $40,000.

Ohio

CINCINNATI—Metal Specialty Co., 1533 Riverside drive, Fred J. Flach president, will build an office and factory building, office 37 x 88 feet, factory 140 x 232 feet. Tietig & Lee, 34 West Sixth street, Cincinnati, architects.

SANDUSKY—Bagdad Copper Corp., E. B. Bronson president, has bought a site and will start construction soon of a copper products plant, 90 x 300 feet.

VERMILION—Wakefield Brass Co., A. F. Wakefield vice president, is planning an addition to its plant to increase floor space 20 per cent.

Michigan

CORUNNA—Corunna Mfg. Co. has been incorporated with $30,000 capital to manufacture truck and automobile cabs and bodies, by Fred D. Ritter and Lawrence F. Gardner, Corunna.

DETROIT—Metal Planes Inc. has been incorporated with $150,000 capital to manufacture airplanes and motors, by Alf Heum, 1939 Glendale avenue, Detroit.

SAULT STE. MARIE—Fuel Oil Corp., Detroit, T. B. Mann manager, will build a fuel oil storage and handling plant here with initial capacity of 1,500,000 gallons, at Portage and Greenough streets.

Indiana

JONESBORO—Paranite Wire & Cable Corp. has been incorporated with 1000 shares no par value to handle wire, cable and iron, steel and copper products, by R. G. Schoel, A. L. Callahan and J. G. Searls.

NEW ALBANY—Gohmann Foundry Co. Inc. has been incorporated with 50 shares no par value to operate a foundry, by Leon H. Gohman and associates.

Illinois

CHICAGO—Closure Lock Corp., 2506 Clybourn avenue, has been incorporated with $60,000 capital to manufacture patented locks, by Oscar Thonander, 1 North LaSalle street.

Southern States

COLUMBIA, S. C.—Gaffnay Foundry & Iron Works has been incorporated with $1200 capital to operate a foundry, by D. H. Sher president, R. L. Champion vice president and S. Robinson secretary.

Texas

FORT WORTH—American Airways, operating division of Aviation Corp., will move its southern division headquarters here from Dallas. Hangars and shops will be built immediately, the main building 120 x 235 feet, to cost $150,000. C. R. Smith is president and chief operating officer.

Wisconsin

GREEN BAY—Green Bay Wire Works Inc. has been incorporated with $100,000 capital to manufacture wire cloth and wire products, by H. D. Smiley and William A. Strassberger, both of Appleton, Wis.

MILWAUKEE—Milwaukee Sprayer Mfg. Co., 6412 Wells street, has been formed to manufacture oil and liquid pressure sprayers, by William W. Koeppell.

Kansas

TOPEKA—Capitol City Machine Shop has been established at 422 Quincy street by W. O. Schaeffer, owner and manager, to do general machine work.

Idaho

TWIN FALLS—W. S. Barstow & Co., engineering contractors, Reading, Pa., have started construction of a 17,000-horsepower hydroelectric power plant at Augur Falls on the Snake river.

Pacific Coast

WOODBURN, OREG.—Ray Brown Canning Co. has had plans drawn for a plant extension, to include a machine shop.

Dominion of Canada

KITCHENER, ONT.—Kitchener Auto Electric Ltd. has been incorporated with $40,000 capital to manufacture automotive parts and accessories, by Crammond E. Morton, Toronto, Ont.

TORONTO, ONT.—Lightolier Ltd. has been incorporated with $40,000 capital to manufacture lighting fixtures and appliances, by Samuel M. Mehr, Toronto.

TORONTO, ONT.—Orilium Corp. Ltd. has been incorporated with 200,000 no par shares to conduct a business as metalworker and brass and iron founder, by William E. Gill, Toronto.

AURORA, ONT.—Bids will be called soon by M. G. Andrews, clerk, for pumps and other equipment for the proposed sewage disposal plant, which will cost about $30,000. James, Proctor & Redfern Ltd., 36 Toronto street, Toronto, Ont., are engineers.

New Trade Publications

FORGING HAMMERS—Nazel Engineering & Machine Works, Philadelphia, in a current bulletin illustrates its motor-driven forging hammer, with reasons for its utilization in the prevention of power waste.

TIN—International Tin committee, research and development section, formerly the Tin Research and Industrial application committee, Mansfield House, 378 Strand, London, Eng., has compiled for the use of the trade a booklet entitled *Tin—World Statistics*, for 1932. It contains statistics regarding production, consumption and stocks of tin and tables of price changes. An acount is also given of the organization of the International Tin committee.

FURNACES—W. S. Rockwell Co., 50 Church street, New York, has prepared three bulletins for the trade: No. 327 covers its electric and fuel rotary carburizing furnaces; No. 328 describes and illustrates its retort-type electric and fuel rotary heat-treating furnace for ferrous and nonferrous metals; No. 330 is general in character and shows many installations of industrial furnaces for a variety of purposes. Each is well illustrated and gives full information and data.